FORMER HANCEVILLE BP

MODIFIED CORRECTIVE ACTION PLAN (CAP)

ATTF CP #29

Former Hanceville BP
US HW 31 & Alabama HW 91
Hanceville, Cullman Co., AL
Fac ID 11402-043-008179
UST 10-02-01

PREPARED FOR
Dean Oil Company
340 County Road 1635
Cullman, AL 35058

DATE
June 20, 2017

PREPARED BY
CDG Engineers & Associates, Inc.
3 Riverchase Ridge
Hoover, AL 35244

CERTIFICATION PAGE

"I hereby certify that, in my professional judgment, the components of this document and associated work satisfy the applicable requirements set forth in Chapter 335-6 of the ADEM Administrative Code, and are consistent with generally accepted professional consulting principles and practices. The information submitted herein, to the best of my knowledge and belief, is true accurate, and complete. I am aware that there are significant penalties for submitting false information."

This document has been prepared based on historical site assessment data and has been prepared to address soil and groundwater contamination at the former Hanceville BP site (Facility Identification Number 11402-043-008179) in Hanceville, Cullman County, Alabama. The recommended action should not be construed to apply to any other site.

Signature
David C. Dailey
Registered Engineer in the State of Alabama
Registration No. 23095

6/22/17
Date

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UST RELEASE FACT SHEET

GENERAL INFORMATION:

SITE NAME: Former Hanceville BP

ADDRESS: U.S. Hwy 31 & AL Hwy 91, Hanceville (Cullman County) Alabama

FACILITY I.D. NO.: 11402-043-008179

UST INCIDENT NO.: UST10-02-01

RESULTS OF EXPOSURE ASSESSMENT:

How many private drinking water wells are located within 1,000 ft. of site?	0
How many public water supply wells are located within 1 mile of the site?	3 (Abandoned)
Have any drinking water supply wells been impacted by contamination from this release?	No
Is there an imminent threat of contamination to any drinking water wells?	{ } Yes {X } No
Have vapors or contaminated groundwater posed a threat to the public?	{ } Yes { X } No
Are any underground utilities impacted or imminently threatened by the release?	{ } Yes {X } No
Have surface waters been impacted by the release?	{ } Yes { X } No
Is there an imminent threat of contamination to surface waters?	{ } Yes { X } No
What is the type of surrounding population?	Commercial

CONTAMINATION DESCRIPTION:

Type of contamination at site: { X } Gasoline, { X } Diesel, { } Waste Oil
{ } Kerosene, { } Other _____

Free product present in wells? {X} Yes { } No Maximum thickness measured: 0.07 ft (MW-5R) on 3/27/12

Maximum BTEX concentrations measured in soil: 38.180 mg/Kg in SB-5 (4-9 ft-bgs) on 2/23/10

Maximum BTEX concentrations measured in groundwater: 49.5882 mg/L in MW-5R on 8/7/2012

ADEM GROUNDWATER BRANCH

UST SITE CLASSIFICATION SYSTEM

CHECKLIST

Please read all of the following statements and mark either yes or no if the statement applies to your site. If you have conducted a Preliminary or Secondary Investigation, all questions should be answered. Closure site assessment reports may not provide you with all the necessary information, but answer the statements with the knowledge obtained during the closure site assessment.

SITE NAME: Former Hanceville BP
SITE ADDRESS: U.S. Hwy 31 & AL Hwy 91
Hanceville, Cullman County, Alabama
FACILITY I.D. NO.: 11402-043-008179
UST INCIDENT NO.: UST10-02-01

OWNER NAME: Dean Oil Company
OWNER ADDRESS: 340 County Road 1635, Cullman, AL 35058

NAME & ADDRESS OF PERSON COMPLETING THIS FORM: Ann Dyer, Project Geologist
CDG Engineers & Associates, Inc.
3 Riverchase Ridge
Birmingham, AL 35244

CLASSIFICATION	*DESCRIPTION*	*YES*	*NO*
CLASS A	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
A.1	Vapor concentrations at or approaching explosive levels that could cause health effects, are present in a residence or building.	☐	☒
A.2	Vapor concentrations at or approaching explosive levels are present in subsurface utility system(s), but no buildings or residences are impacted.	☐	☒
CLASS B	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
B.1	An active public water supply well, public water supply line, or public surface water intake is impacted or immediately threatened.	☐	☒
B.2	An active domestic water supply well, domestic water supply line or domestic surface water intake is impacted or immediately threatened.	☐	☒
B.3	The release is located within a designated Wellhead Protection Area I.	☐	☒
CLASS C	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
C.1	Ambient vapor/particulate concentrations exceed concentrations of concern from an acute exposure, or safety viewpoint.	☐	☒
C.2	Free product is present on the groundwater, at ground surface, on surface water bodies, in utilities other than water supply lines, or in surface water runoff.	☐	☒

CLASSIFICATION	*DESCRIPTION*	*YES*	*NO*
CLASS D	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
D.1	There is a potential for explosive levels, or concentrations of vapors that could cause acute effects, to accumulate in a residence or other building.	☐	☒
D.2	A non-potable water supply well is impacted or immediately threatened.	☐	☒
D.3	Shallow contaminated surface soils are open to public access, and dwellings, parks, playgrounds, day care centers, schools or similar use facilities are within 500 feet of those soils.	☐	☒
CLASS E	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
E.1	A sensitive habitat or sensitive resources (sport fish, economically important species, threatened and endangered species, etc.) are impacted and affected.	☐	☒
CLASS F	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
F.1	Groundwater is impacted and a public well is located within 1 mile of the site.	☐	☒
F.2	Groundwater is impacted and a domestic well is located within 1,000 feet of the site.	☐	☒
F.3	Contaminated soils and/or groundwater are located within designated Wellhead Protection Areas (Areas II or III).	☐	☒
CLASS G	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
G.1	Contaminated soils and/or groundwater are located within areas vulnerable to contamination from surface sources.	☒	☐
GLASS H	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
H.1	Impacted surface water, stormwater or groundwater discharges within 500 feet of a surface water body used for human drinking water, whole body water-contact sports, or habitat to a protected or listed endangered plant and animal species.	☐	☒
CLASS I	LONG TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
I.1.	Site has contaminated soils and/or groundwater but does not meet any of the above mentioned criteria.	☐	☒

ADDITIONAL COMMENTS:

Complete the classification evaluation questions listed above. Upon completion, determine the highest rank of the site (A.1 is the highest rank) based on the statements answered with a yes.

Enter the determined classification ranking:	G.1.

ADEM GROUNDWATER BRANCH
SITE CLASSIFICATION CHECKLIST
(5/8/95)

1.0 SITE LOCATION AND HISTORY

The following Corrective Action Plan (CAP) details the activities which will be undertaken to address the effective remediation of soil and groundwater impacts resulting from an historical release of petroleum product at the former Hanceville BP facility (Facility ID # 11402-043-008179). The release incident (Incident No. UST10-02-01) was issued by the Alabama Department of Environmental Management (ADEM) on February 4, 2010 based on the results of a Limited Phase II Environmental Site Assessment (ESA) completed for the site by S&ME in December 2009.

According to the USGS topographic map of the area (Figure 1), the former Hanceville BP is located at an elevation of approximately 540 feet above the national geodetic vertical datum (NGVD). The geographical coordinates are Latitude 34° 03' 40" North and Longitude 86° 46' 62" West. The terrain in the vicinity of the site is generally flat. The regional topography generally slopes to the east-southeast toward an unnamed tributary of Mud Creek located approximately 150 feet south-southeast of the facility which eventually discharges to Mud Creek located approximately 2,500 feet south of the site. The site location is illustrated in Figure 1.

2.0 SUMMARY OF PREVIOUS SITE INVESTIGATIONS

The Former Hanceville BP facility is an inactive gasoline retail facility that is owned by Dean Oil Company. The site was reportedly developed as a gas station in 1953 and remained in operation until 1999. Based on the *Limited Phase II Environmental Site Assessment/Proposed CVS Store #4960, January 2010*, an Underground Storage Tank (UST) closure by removal was performed in 1999. One (1) registered 8,000 gallon gasoline UST was located in one (1) tank hold and two (2) unregistered 2,000 gallon diesel and two (2) unregistered 1,000 gallon USTs (contents unknown) were located in a separate tank hold. The exact locations of each tank hold are unknown and, therefore the mapped locations may vary slightly. The *Limited Phase II ESA* was conducted on the property of the Former Hanceville BP facility by S&ME in December

2009. During completion of the *Limited Phase II ESA*, elevated soil and groundwater BTEX, MTBE, and naphthalene concentrations were discovered. A Notification of Requirement (NOR) to conduct investigative and corrective actions was issued by the ADEM in correspondence dated February 4, 2010 following review of the *Limited Phase II ESA*.

An On-Site Secondary Investigation was completed for the site in March 2010. The field activities for the On-Site Secondary Investigation included the installation of nine (9) soil borings, SB-1 through SB-8 and SBV-1. Borings SB-1 through SB-8 were converted into Type II monitoring wells MW-1 through MW-8, respectively. Boring SBV-1 was converted into a Type III vertical well, VW-1. The depths of the Type II wells range from approximately sixteen (16) feet below ground surface (ft-bgs) to seventeen (17) ft-bgs. The depth of VW-1 is approximately thirty-eight (38) ft-bgs.

Soil samples collected from soil borings SB-1, SB-2, SB-3, SB-4, and SB-8 were analyzed for BTEX/MTBE in accordance with EPA Method 8260B and polycyclic aromatic hydrocarbons (PAHs) in accordance with EPA Method 8270C (Table 3). Samples collected from soil borings SB-5, SB-6, SB-7, and SBV-1 were analyzed for BTEX/MTBE and Naphthalene in accordance with EPA Method 8260B (Tables 2 & 3). Nine (9) of the eighteen (18) soil samples submitted for analyses contained detectable concentrations of BTEX constituents. The soil samples collected from soil borings SB-1 from 9.0 – 12.0 ft-bgs, SB-4 from 9.0 – 12.0 ft-bgs, SB-5 from 4.0 – 9.0 ft-bgs, SB-5 from 9.0 – 11.0 ft-bgs, SB-8 from 9.0 – 12.0 ft-bgs, SBV-1 from 4.0 – 9.0 ft-bgs, and SBV-1 from 9.0 – 11.0 ft-bgs contained benzene concentrations that exceeded the ADEM initial screening level (ISL) for benzene of 0.00845 milligrams per kilogram (mg/Kg). Additional BTEX constituents were detected in soil samples collected from soil borings SB-1, SB-2, SB-4, SB-8, and SBV-1 but did not contain BTEX constituents that exceeded the ADEM ISLs for toluene, ethylbenzene, and total xylenes. Three (3) of the eighteen (18) soil samples submitted for analysis contained detectable MTBE concentrations. The soil samples collected from SB-2 at a depth of 9.0 – 12.0 ft-bgs, SBV-1 from 4.0 – 9.0 ft-bgs, and SBV-1 from 9.0 – 11.0 contained MTBE concentrations which exceeded the ADEM ISL for MTBE of 0.00862

mg/Kg. Four (4) of the eighteen (18) soil samples submitted for analysis contained naphthalene concentrations in exceedance of the ADEM ISL for naphthalene of 0.579 mg/Kg: SB-1 from 4.0 – 9.0 ft-bgs, SB-1 from 9.0 – 12.0 ft-bgs, SB-5 from 4.0 – 9.0 ft-bgs, and SB-5 from 9.0 - 11.0 ft-bgs. Additional naphthalene concentrations were detected in soil samples from SBV-1 but did not exceed the ADEM ISL for naphthalene. PAH analysis on soil boring SB-1 showed detectable concentrations of anthracene, fluorene, phenanthrene, and pyrene, but did not exceed the ADEM ISLs for any of these constituents (see Table 3).

Five (5) of the eight (8) monitoring wells sampled contained benzene concentrations above the ADEM ISL for benzene of 0.005 milligrams per liter (mg/L): MW-1 (0.2347 mg/L), MW-4 (0.0719 mg/L), MW-5 (0.7332 mg/L), MW-6 (0.7702 mg/L), and MW-8 (0.0544 mg/L). Six (6) of the eight (8) wells sampled contained toluene and ethylbenzene concentrations: MW-1, MW-4, MW-5, MW-6, MW-8, and VW-1. Monitoring well MW-6 was the only well that exceeded the ADEM ISLs for toluene (1.000 mg/L) and ethylbenzene (0.700 mg/L) with concentrations of 1.0642 mg/L and 1.1012 mg/L, respectively. Seven (7) of the eight (8) wells sampled contained total xylene concentrations: MW-1, MW-3, MW-4, MW-5, MW-6, MW-8, and VW-1, but did not exceed the ADEM ISLs for total xylene of 10.000 mg/L. Six (6) of the eight (8) monitoring wells sampled had detectable concentrations of MTBE with concentrations in three (3) of the monitoring wells, MW-1 (0.0589 mg/L), MW-5 (0.3568 mg/L), and VW-1 (0.8438 mg/L), exceeding the ADEM ISL for MTBE of 0.020 mg/L. Six (6) of the eight (8) monitoring wells sampled contained detectable concentrations of naphthalene, with concentrations in monitoring wells MW-1 (0.0528 mg/L), MW-5 (0.0229 mg/L), and MW-6 (0.2727 mg/L), exceeding the ADEM ISL for naphthalene of 0.02 mg/L. Seven (7) of the eight (8) monitoring wells sampled had detectable concentrations of Lead with concentrations in six (6) of the monitoring wells, MW-1 (0.0990 mg/L), MW-4 (0.0340 mg/L), MW-5 (0.1600 mg/L), MW-6 (0.0430 mg/L), MW-7 (0.2820 mg/L), and VW-1 (0.0320 mg/L), exceeding the ADEM ISL for Lead of 0.0150 mg/L. Summaries of the groundwater analytical data are presented in Tables 4 and 5. Free product was detected in monitoring well MW-2 which contained a free product thickness of 0.05 feet.

Based on the results of the On-Site Secondary Investigation, an Off-Site Secondary Investigation was completed for the site in April 2010. The field activities for the Off-Site Secondary Investigation included the installation of borings SB-9 through SB-13 and SBV-2. Borings SB-9 through SB-13 were converted into Type II monitoring wells MW-9 through MW-13, respectively. Boring SBV-2 was converted into Type III monitoring well VW-2.

Only one (1) of the soil samples collected during the Off-Site Secondary Investigation contained a hydrocarbon concentration above the ISLs. The sample collected from boring SBV-2 contained a benzene concentration of 0.0356 mg/kg, which is above the ISL of 0.00845 mg/kg. All of the soil samples collected during the Off-Site Secondary Investigation contained lead concentrations above the ISLs.

None of the groundwater samples collected during the Off-Site Secondary Investigation contained BTEX, MTBE, or naphthalene concentrations above the ISLs. However, the groundwater samples collected from monitoring wells MW-9 through MW-13 contained lead concentrations above the ISL.

3.0 SUMMARY OF PREVIOUSLY CONDUCTED CORRECTIVE ACTION

Personnel from CDG, along with Brown Remediation, Inc. (Brown) of Atlanta, Georgia, mobilized to the former Hanceville BP facility on July 27, 2010 to conduct one (1) 24-hour MEME event. The system utilized by Brown included a 25-horsepower wet lobe positive displacement blower capable of applying a maximum vacuum of 25 inches of mercury (in Hg) and maximum flow rate of 300 actual cubic feet per minute (ACFM). Off gases were treated using a forced air thermal oxidation (ThOx) unit. The soil vapors were incinerated at approximately 1,500 degrees Fahrenheit and the treated air was then discharged into the atmosphere. There were no fluids recovered during the event. All extracted groundwater was thermally destructed as coolant water for the rotary-lobe pump.

The 24-hour MEME event was conducted at the site beginning at approximately 13:00 p.m. on July 27, 2010 and completed at approximately 13:00 p.m. on July 28, 2010. Prior to the MEME event, monitoring wells MW-1, MW-2, MW-3, MW-6, MW-8, VW-1, and VW-2 were gauged to obtain water level and free product thickness data. Free product was detected in monitoring well MW-2 which contained a free product thickness of 0.32 feet. During the 24-hour event, monitoring well MW-2 was used for groundwater and vapor recovery.

During the MEME event, an applied well head vacuum of 8.0 to 16.0 in-Hg was applied to monitoring well MW-2 which produced an average flow rate of 114.5 standard cubic feet per minute (SCFM) from the extraction well. Approximately 9.56 pounds of carbon and 31.92 pounds of hydrocarbons (5.17 equivalent gallons of gasoline) were recovered and destroyed during the 24-hour event. No petroleum contact water (PCW) was recovered during the 24-hour event.

Since the initial MEME event conducted at the site on July 27, 2010, forty-five (45) additional MEME events have been conducted at the site. Approximately 1,072 pounds of hydrocarbon (173.7 equivalent gallons of hydrocarbon) were recovered during the forty-six (46) MEME events conducted at the site. Approximately 9,608 gallons of PCW was recovered during the forty-six (46) MEME events.

4.0 REMEDIAL OBJECTIVES AND EXPOSURE ASSESSMENT

4.1 General Remedial Objectives

- The general objectives of this corrective action plan and the remedial efforts for the facility are as follows:
- Ensure that the health and safety of all project personnel is maintained during remediation activities.
- Prevent hydrocarbon migration to sensitive receptors.

- Remove free product from the site subsurface, if present.
- Reduce adsorbed phase petroleum hydrocarbons from soils within the vadose and saturated zone, primarily in the source area, to below approved ACALs.
- Reduce dissolved petroleum hydrocarbons from groundwater to below approved ACALs.
- Accomplish these objectives within the proposed period of operation.

4.2 Exposure Assessment

An exposure assessment was conducted by CDG during the ARBCA evaluation. The following receptor survey information has been drawn from the ARBCA Tier II Evaluation report:

Receptor Type	Actual Receptor	Onsite/Offsite	Pathway Status
Commercial Sites	Commercial 10 hr/day	On Site	Complete. Soil & Groundwater Vapor Inhalation. Future - Soil & Groundwater Vapor Inhalation.
	Commercial 10 hr/day	Off Site	Complete. Dermal Contact, Soil & Groundwater Vapor Inhalation. Future - Dermal Contact, Soil & Groundwater Vapor Inhalation.
	Construction Worker	On Site	Complete. Dermal Contact, Soil & Groundwater Vapor Inhalation. Future - Dermal Contact, Soil & Groundwater Vapor Inhalation.
	Construction Worker	Off Site	Complete. Dermal Contact, Soil & Groundwater Vapor Inhalation. Future - Dermal Contact, Soil & Groundwater Vapor Inhalation.
Residences	Resident 24 hr/day	On Site	Not Complete. The site is developed as commercial property. There is no on-site residential use.
	Resident 24 hr/day	Off Site	Not Complete. The subsurface soil and groundwater is not impacted off site by the release.
Utilities	Water	On Site	Not Complete. Water and sewer is supplied by municipal sources. Utilities are not impacted nor potentially impacted by this release.

The current land use site conceptual exposure model indicates that a complete exposure pathway for vapor inhalation exists for onsite and offsite commercial workers and construction workers. Any commercial facility would likely have consistent hours of operation for employees at the facility. Employees would usually be on site no longer than 10 hours. Future land use of the site and the surrounding area is expected to remain commercial.

According to a representative of the Waterworks & Sewer Board of the City of Hanceville, the city obtains its municipal water supply from a public water supply well located greater than one (1) mile from the site. Information available from the USGS and conversations with city officials indicates that no public water supply wells are located within one (1) mile of the site.

4.3 Specific Remedial Objectives

As part of the ARBCA Tier II evaluation process, alternate corrective action limits (ACALs) were calculated for the various media (soil and groundwater) at the site based upon the site exposure assessment. The ACALs were calculated in the ARBCA evaluation conducted in June 2010 and were approved by ADEM on November 11, 2010. A summary of the proposed Tier II ACALs is presented in Appendix A and in the Monitoring Point Data Summary Table.

5.0 RECENT MONITORING ACTIVITIES, RESULTS, AND COMPARISONS TO ACALS

CDG has prepared the following CAP that will address both soil and groundwater contamination at the site. As part of CAP development, current representative concentrations for the chemicals of concern (COC) are needed in the evaluation and design of a plan to effectively treat and reduce contaminants. The site has had multiple approved groundwater monitoring and MEME events conducted. The most recent groundwater monitoring event was completed on January 20, 2017. The following details the activities and results of the January 20, 2017 groundwater monitoring event.

5.1 Groundwater Monitoring Activities

The former Hanceville BP monitoring well network currently consists of eleven (11) Type II monitoring wells (MW-1R, MW-2, MW-3R, MW-4R, MW-5R, MW-6, MW-8, MW-10R, MW-11, MW-12, and MW-13), one (1) Type III monitoring well (VW-1R), and two (2) Type II recovery wells (RW-1 and RW-2). Two (2) additional Type II monitoring wells installed during the Secondary Investigations (MW-7 and MW-9) and one (1) Type III well (VW-2) have been destroyed due to construction activities for a new CVS Pharmacy currently located at the site. Originally installed monitoring wells MW-1, MW-3, MW-4, MW-5, MW-10R, and VW-1 were also destroyed during these construction activities but were replaced by CDG in December 2010. Monitoring well MW-11 is located off-site and has been destroyed.

Groundwater samples were collected from each of the site monitoring wells on January 20, 2017 by CDG personnel. Upon arriving at the site for groundwater monitoring, all well caps were removed and the water levels in the wells were allowed to stabilize. Potentiometric levels were then measured with an electronic oil/water interface probe and recorded in a field book. Free product was not detected at the site. Following the gauging of each well at the site, the wells were purged and sampled. The purging and sampling was performed with a new disposable plastic bailer and twine for each well. The purge water was containerized and transported back to the CDG storage location at 3071 Pelham Parkway in Pelham, Alabama for disposal per industry standards at a later date. During the monitoring event conducted on January 20, 2017, approximately 25.6 gallons of purge water was collected from the monitoring wells. On January 27, 2017, the water was collected and transported by Alabama Oil & Gas Recovery, Inc. to the Allied Energy Corporation waste facility in Birmingham, Alabama for final disposal.

Following the purging activities, groundwater samples were collected from each chosen well using clean plastic bailers and transferred to laboratory supplied 40ml amber glass volatile organic analysis (VOA) vials preserved with HCl for benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertiary butyl ether (MTBE), and naphthalene analysis. The

BTEX/MTBE/Naphthalene samples were placed on ice and transported under chain of custody to the CDG laboratory in Andalusia, Alabama, where they were analyzed in accordance with EPA Method 8260.

5.2 Laboratory Analytical Results

Based on the analytical results of the January 20, 2017, sampling event, concentrations of dissolved benzene were detected in seven (7) of the eight (8) samples collected. Benzene concentrations in monitoring wells MW-5R (0.5304 mg/L), MW-6 (0.4859 mg/L), and RW-1 (0.3820 mg/L) exceeded the ARBCA Tier II Alternative Corrective Action Limit (ACAL) of benzene generated for each well. The benzene concentrations in all other monitoring well were below the respective ARBCA Tier II ACAL for benzene.

Additional dissolved concentrations of toluene, ethylbenzene, and total xylenes were detected in seven (7) of the eight (8) samples submitted for analysis. These concentrations were below the ARBCA Tier II ACALs generated for each of these wells for these constituents.

Dissolved concentrations of MTBE were detected in seven (7) of the eight (8) samples submitted for analysis. These concentrations were below the ARBCA Tier II ACALs generated for each of these wells for these constituents. Historical groundwater analytical results are presented in the Monitoring Point Data Summary Tables.

5.3 Conclusions

Soil/ Groundwater Contamination and Site Conditions

Based on the exposure assessment that onsite commercial and construction workers, current soil and groundwater concentrations were compared to the proposed ACALs determined in the ARBCA evaluation.

Two (2) of the soil samples collected from the site contained hydrocarbon concentrations above the ACALs. Both of the samples collected from soil boring SB-5 contained benzene and naphthalene concentrations above the ACALs. None of the other samples contained BTEX, MTBE, naphthalene, or lead concentrations above the ACALs.

Groundwater samples collected in January 2017 and previous events indicate that a petroleum hydrocarbon plume most likely originated in the area around the former UST hold and/or the fuel dispenser islands. Based upon the January 2017 sampling event, the benzene concentrations in monitoring wells MW-5R, MW-6, and RW-1 exceeded the approved GRP and ACALs. All other BTEX constituent concentrations were below the ARBCA Tier II ACALs generated for each of the source wells and POCs. The ACALs generated for MTBE and naphthalene were not exceeded in any of the samples collected. Free product has not been detected at the site since October 2, 2016.

6.0 REMEDIATION RATIONALE AND APPROACH

A comparison of the current groundwater data indicates that dissolved hydrocarbon concentrations in monitoring wells MW-5R, MW-6, and RW-1 are above the GRP ACALs. The dissolved hydrocarbon concentrations have fluctuated over time, using a combination of RNA and MEME technology. Considering all of the factors, it is evident that aggressive remediation of the groundwater or soil at the site is not warranted.

In order to accelerate the reduction of dissolved hydrocarbon concentrations, CDG recommends that the RNA and MEME activities be enhanced with the introduction of mobile air sparging (AS) technology. Because the COC concentrations observed do not warrant aggressive remediation of the groundwater or soil, RNA in conjunction with quarterly MEME/AS events would be an effective means of achieving the site-specific cleanup goals.

Natural attenuation is the process by which dilution, volatilization, biodegradation, adsorption, and chemical reactivity are allowed to reduce contaminant concentrations to acceptable levels. As a general rule, decreasing trends indicate these natural attenuation processes are occurring and will likely continue to reduce the contaminant concentrations to below acceptable levels, when used in conjunction with MEME/AS events. If COC concentrations increase based on future monitoring results, the CAP approach should be re-evaluated.

7.0 REMEDIATION RECOMMENDATION PLAN

To address the existing levels of groundwater contamination at the site, the following approach is recommended:

A total of six (6) sparge points will be installed at the site. Each of the sparge points will be constructed with one (1)-inch diameter Schedule 40 PVC risers extending from just below the ground surface to approximately two (2) feet above the bottom of the boring. Approximately two (2) feet of screen (0.020-inch slotted) will be connected to the bottom of the solid riser. The risers and screen will be connected using threaded, flush-joint connections. Two (2) of the proposed sparge points will be located in the vicinity of monitoring well MW-6, and three (3) of the sparge points will be located in the vicinity of monitoring wells MW-5 and RW-1. The locations of the proposed sparge points are illustrated on Figure 3.

The total depth of the proposed sparge points is approximately 15 ft-bgs. Well-graded sand will be placed in the boring annulus for each sparge point from the bottom of the boring to at least two (2) feet above the top of the screen. A bentonite seal approximately two (2) feet thick will be placed at the top of each sand pack. A cement/bentonite grout will be placed above the bentonite seal to within approximately one (1) ft-bgs. The purpose of the bentonite seal and grout is to reduce the potential for air to escape up the boring and to the ground surface.

The sparge points will be set within twelve (12)-inch diameter steel manway covers surrounded by concrete pads. Construction details are shown in Figure 8.

Following the installation of the proposed recovery wells and sparge points, the corrective action approach involves allowing natural attenuation in combination with quarterly 24-hour MEME/AS events to reduce contaminant concentrations to acceptable levels for site closure. In order to receive authorization to inject atmospheric air into the subsurface, an Underground Injection Control (UIC) Permit will be required by ADEM.

Quarterly groundwater monitoring events will be conducted for up to two (2) years to monitor the natural attenuation progress toward the remediation goals. Monitoring wells will be sampled for BTEX, MTBE, and naphthalene analytes and for natural attenuation parameters (DO, pH, and ORP). Following four (4) quarterly groundwater-monitoring events, CDG will recommend the site for No Further Action (NFA) status if remediation goals have been met. Should target levels continue to exceed the ACALs in the source area after one (1) year of monitoring and the contaminant plume maintains a stable or decreasing trend, groundwater monitoring should be continued. If COC concentrations increase based on future monitoring results, the CAP approach should be re-evaluated.

8.0 PROPOSED REPORTING REQUIREMENTS

CDG will submit reports in accordance with ADEM requirements. These reports will include the following:

Reporting of Natural Attenuation Effectiveness - CDG proposes to submit quarterly NAMR reports, which will summarize field activities and the progress of site groundwater constituent concentrations towards achieving approved corrective action levels. The following data will be included in each report: field activities performed, groundwater elevations, groundwater analytical results as compared to target levels, MEME/AS event results, potentiometric surface maps, and BTEX and MTBE constituent concentration maps. The reports will also include remediation effectiveness and recommendations concerning additional measures deemed necessary.

Request for Closure Evaluation of Corrective Action - This report will include data that shows that remediation goals have been achieved and request a status of NFA. Methods for abandonment of monitoring and recovery wells will be described.

Site Closure Report - This report will describe in detail the closure of the site and removal of all monitoring wells.

9.0 SCHEDULE OF IMPLEMENTATION

It is anticipated that the proposed Modified CAP will begin with the first groundwater monitoring and MEME/AS event following the approval of the Modified CAP. The following schedule indicates the timetable for major project events to be completed as part of this corrective action plan:

Time Following Cap Approval (months)	Project Event	Project Event Length
0 – 24	Quarterly groundwater monitoring and monthly MEME/AS events, evaluation of performance, recommendations for further corrective action if required	2 Years
25	Well abandonment; completion and submittal of final report if allowable by ADEM	2 Months

10.0 PROPOSED FREE PRODUCT RECOVERY AND GROUNDWATER MONITORING ACTIVITIES

Following the approval of the Modified CAP, monthly 12-hour duration MEME/AS events will be conducted at the site in order to reduce dissolved hydrocarbon concentrations in the vicinity of monitoring wells MW-5, MW-6, and RW-1. During the entire event, atmospheric air will be injected into the five (5) sparge points, while vapor and groundwater extraction will be

conducted on monitoring wells MW-5, MW-6, and RW-1. The MEME/AS events will be conducted using a mobile liquid ring MPVE system equipped with a mobile AS system operated by Brown Remediation (Brown), pending availability. The MEME system has been approved by the ADEM for use at numerous locations in Alabama for free product recovery, emergency response, and pilot testing activities. The unit operates with continuously monitored off-gas treatment (thermal destruction).

Prior to the event, static water levels in all site wells will be recorded. Applied vacuum in the extraction well and casing vacuums in the observation wells will be recorded periodically during testing (except when the unit is not attended). Water level and vacuum measurements, to determine the radius of influence, will be obtained periodically from observation wells. Measurements of flow and hydrocarbon concentrations will also be obtained periodically during the test. Field measurements will be obtained using a calibrated Photo Ionization Detector (PID) instrument. Hydrocarbon removal rates will be calculated and plotted.

Air will be injected into up to five (5) AS points simultaneously. The AS points will be equipped with wellhead pressure gauges, flowmeters, and control valves. An air supply system consisting of an air filter, air compressor, and pressure vessel. The air compressor should be capable of providing at least 20 cfm at pressures up to 10 to 15 pounds per square inch (gauge) (psig) above the calculated hydrostatic pressure.

The data from the initial MEME/AS event will be evaluated and a decision made about whether or not MEME/AS is an effective remedial option for the site. Factors that would indicate that air sparging is infeasible or less than optimal at the site include:

- If air could not be injected into the aquifer at a flowrate of 5 to 20 cfm at a pressure that does not exceed the soil overburden;
- If mass removal rates during the pilot test are very low, then there should be considerable concern about the viability of air sparging at the site. If pilot sparging wells are placed in

high concentration areas, pilot test data typically represent the maximum achievable removal rate observed over the lifetime of the air sparging project;

- If all of the injected air appears to be conducted through a channel of high permeability, then air sparging either may be infeasible or site-specific system design enhancements may be necessary to avoid and/or compensate for this channeling;
- If the groundwater pressures remain elevated for more than 8 hours, it can be assumed that the injected air is trapped or limited by subsurface stratification and may not be reaching the targeted treatment zone.

Once per quarter, groundwater samples will be collected quarterly from all monitoring wells. The groundwater samples will be collected from the monitoring wells using new clean plastic bailers and transferred to 40 milliliter (mL) glass volatile organic analysis (VOA) vials preserved with hydrochloric acid (HCl) for BTEX, MTBE, and naphthalene analysis in accordance with EPA Method 8260B. During each groundwater sampling event, all monitoring wells will also be sampled for natural attenuation parameters (DO, pH, and ORP). The natural attenuation parameters will provide information concerning the recovery of the shallow aquifer down gradient of the release area. All purge water will be disposed of by Alabama Oil and Gas Recovery, Inc.

The results of the proposed activities will be submitted to the ADEM in the form of a NAMR/MEME Report. The report will include conclusions regarding the effectiveness of the recovery activities performed, and recommendations for future site activities.

Engineering. Environmental. Answers.

Tables

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-1R**		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	17.15 15.22	SCREEN INTERVAL (FT):	5.22-15.22	CASING ELEV (FT ABOVE MSL):	541.54 539.61	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
04/14/10	8.28	533.26	-	-
07/22/10	8.85	532.69	-	-
10/28/10	WELL DESTROYED			
06/14/11	6.54	533.07	-	-
08/26/11	6.99	532.62	-	-
03/27/12	6.05	533.56	-	-
03/28/12	6.93	532.68	-	-
03/29/12	7.98	531.63	-	-
08/07/12	7.06	532.55	-	-
12/05/12	8.23	531.38	0.01	-
03/04/13	6.03	533.58	-	-
04/03/13	5.96	533.65	-	-
04/30/13	5.72	533.89	-	-
08/07/13	5.92	533.69	-	-
08/30/13	6.42	533.19	-	-
12/13/13	8.24	531.37	-	-
05/30/14	6.20	533.41	-	-
09/23/14	7.43	532.18	-	-
01/16/15	6.41	533.20	-	-
06/01/15	5.84	533.77	-	-
10/02/15	7.43	532.18	-	-
02/01/16	6.27	533.34	-	-
05/19/16	6.35	533.26	-	-
10/02/16	7.60	532.01	-	-
01/20/17	8.08	531.53	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
04/14/10	-	-	-
07/22/10	0.11	6.6	99.9
10/28/10	WELL DESTROYED		
06/14/11	0.18	6.51	83.6
08/26/11	NM	7.05	79.8
03/27/12	-	-	-
03/28/12	-	-	-
03/29/12	1.57	7.24	-79.6
08/07/12	0.78	7.7	36.2
12/05/12	FREE PRODUCT (0.01 FT)		
03/04/13	-	-	-
04/03/13	-	-	-
04/30/13	-	-	-
08/07/13	-	-	-
08/30/13	0.21	6.39	133.8
12/13/13	0.95	7.14	94.7
05/30/14	1.13	6.32	83.2
09/23/14	0.94	7.15	138.9
01/16/15	1.39	7.38	107.5
06/01/15	1.63	7.23	134.9
10/02/15	1.67	7.66	182.3
02/01/16	1.77	7.43	162.3
05/19/16	1.33	7.52	118.6
10/02/16	1.56	7.64	120.6
01/20/17	1.67	7.6	120.6

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	MW-1R		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	17.15 15.22	SCREEN INTERVAL (FT):	5.22-15.22	CASING ELEV (FT ABOVE MSL):	541.54 539.61	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	0.0589	**0.2347**	0.0646	0.3253	0.4157	1.0403	0.0528
07/22/10	0.0443	0.1920	0.0267	0.1853	0.1892	0.5932	0.0244
10/28/10	WELL DESTROYED						
06/14/11	0.0286	**0.3201**	0.0645	0.3694	0.9346	1.6886	0.0887
08/26/11	0.0964	**0.2585**	0.0529	0.3182	0.5503	1.1799	0.0506
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	0.0692	**0.2372**	0.0706	0.4944	1.1826	1.9848	0.1461
08/07/12	0.0181	**0.2915**	0.1331	0.8054	2.4947	3.7247	0.3813
12/05/12	NOT SAMPLED - FREE PRODUCT (0.01 FT)						
05/07/13	NOT SAMPLED - UNABLE TO ACCESS WELL						
08/07/13	0.0080	0.1510	0.0370	0.3420	0.7720	1.3020	0.2140
08/30/13	0.0263	0.1960	0.1800	0.5548	1.7813	2.7121	0.2955
12/13/13	<0.0100	0.1410	0.0548	0.2950	0.7058	1.1966	0.1090
05/30/14	0.0120	0.0630	0.0150	0.0510	0.1040	0.2330	0.0210
09/23/14	0.0209	**0.2165**	0.0505	0.2997	0.2873	0.8540	0.1414
1/16/145	0.0260	0.1200	0.0250	0.1600	0.1290	0.4340	0.0850
06/01/15	0.0110	0.1038	0.0231	0.1806	0.1113	0.4188	0.0517
10/02/15	0.0038	**0.2136**	0.0468	0.2713	0.1111	0.6428	0.0875
02/01/16	0.0490	0.1770	0.0330	0.1980	0.0900	0.4980	0.0310
05/19/16	0.0230	0.1620	0.0280	0.1870	0.0850	0.4620	0.0840
10/02/16	0.0157	**0.2270**	0.0306	0.2232	0.0591	0.5399	0.0713
01/20/17	0.0581	0.1975	0.0216	0.1703	0.0478	0.4372	0.0413
GRP SSTLs:	**0.8300**	**0.2080**	**41.5000**	**29.1000**	**175.0000**		**0.8300**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	MW-2		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	17 13.5	SCREEN INTERVAL (FT):	4.88-14.88	CASING ELEV (FT ABOVE MSL):	542.09 538.59	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
03/15/10	8.60	533.53	0.05	-
04/14/10	8.46	530.14	0.02	-
07/22/10	9.12	529.71	0.32	-
10/28/10	8.75	529.84		-
06/14/11	6.88	531.72	0.01	-
08/26/11	6.42	532.18	0.01	-
03/29/12	5.48	533.12	0.01	-
08/07/12	6.48	532.11	-	-
12/05/12	5.97	532.62	-	-
03/04/13	5.22	533.37	-	-
04/03/13	5.41	533.18	-	-
04/30/13	7.16	531.43	-	-
05/07/13	5.85	532.74	-	-
08/07/13	5.10	533.49	-	-
08/30/13	6.44	532.15	-	-
12/13/13	5.73	532.86	-	-
05/30/14	5.26	533.33	-	-
09/23/14	6.18	532.41	-	-
01/16/15	6.02	532.57	-	-
06/01/15	5.85	532.74	-	-
10/02/15	6.11	532.48	-	-
02/01/16	5.68	532.91	-	-
05/19/16	5.59	533.00	-	-
10/02/16	6.21	532.38	-	-
01/20/17	7.08	531.51	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
03/15/10	FREE PRODUCT (0.05 FT)		
04/14/10	FREE PRODUCT (0.02 FT)		
07/22/10	FREE PRODUCT (0.32 FT)		
10/28/10	0.33	6	12.4
06/14/11	FREE PRODUCT (0.01 FT)		
08/26/11	FREE PRODUCT (0.01 FT)		
03/29/12	FREE PRODUCT (0.01 FT)		
08/07/12	0.25	7.14	13.1
12/05/12	0.43	6.98	18.2
03/04/13	-	-	-
04/03/13	-	-	-
04/30/13	-	-	-
05/07/13	0.75	6.63	102.4
08/07/13	0.16	6.46	152.3
08/30/13	-	-	-
12/13/13	0.61	6.95	105.4
05/30/14	0.76	6.72	176.4
09/23/14	1.18	7.32	164.8
01/16/15	0.94	7.3	158.5
06/01/15	1.08	7.38	191.5
10/02/15	1.38	7.64	167.8
02/01/16	1.38	7.38	180.3
05/19/16	1.72	7.93	183.2
10/02/16	1.73	7.38	134.3
01/20/17	1.48	7.43	130.4

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	MW-2		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	17 13.5	SCREEN INTERVAL (FT):	4.88-14.88	CASING ELEV (FT ABOVE MSL):	542.09 538.59	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	NOT SAMPLED - FREE PRODUCT (0.05 FT)						
07/22/10	NOT SAMPLED - FREE PRODUCT (0.32 FT)						
10/28/10	0.2399	**4.2065**	6.8426	1.1828	8.3265	20.5584	0.7062
06/14/11	NOT SAMPLED - FREE PRODUCT (0.01 FT)						
08/26/11	NOT SAMPLED - FREE PRODUCT (0.01 FT)						
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	NOT SAMPLED - FREE PRODUCT (0.01 FT)						
08/07/12	0.1100	**0.2694**	0.2088	0.1812	0.7101	1.3695	0.4749
12/05/12	0.5480	**0.3430**	0.4010	0.4610	2.1700	3.3750	0.5960
05/07/13	0.3408	**1.4512**	0.6392	0.5449	2.1754	4.8107	0.2988
08/07/13	0.1870	0.0970	0.0150	0.0950	0.3020	0.5090	0.0510
08/30/13	0.0629	**0.3908**	0.5215	0.7859	4.0110	5.7092	0.4819
12/13/13	<0.0500	0.1260	0.4240	12.0000	53.9400	66.4900	**2.6300**
05/30/14	0.2150	0.0650	0.0060	0.0720	0.3730	0.5160	0.1340
09/23/14	0.2611	0.2019	0.0556	0.1669	0.5442	0.9686	0.1470
01/16/15	0.0230	0.0230	0.0110	0.2190	1.2000	1.4530	**1.0500**
06/01/15	0.0300	0.0899	0.0417	0.1218	0.4573	0.7107	0.1062
10/02/15	0.0583	**0.4278**	0.3244	0.4515	3.2625	4.4662	0.5969
02/01/16	0.0150	0.0620	0.0540	0.4490	2.4500	3.0150	**1.0700**
05/19/16	0.0560	0.0900	0.0320	0.1100	0.4800	0.7120	0.1170
10/02/16	0.1139	0.1650	0.0772	0.1733	0.7163	1.1318	0.1810
01/20/17	0.0107	0.0374	0.0259	0.0655	0.2010	0.3298	0.1795
GRP SSTLs:	**0.8320**	**0.2080**	**41.6000**	**29.1000**	**175.0000**		**0.8320**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	MW-3R		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	16.13 15.14	SCREEN INTERVAL (FT):	5.04-15.04	CASING ELEV (FT ABOVE MSL):	541.30 540.31	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
03/15/10	7.27	534.03	-	-
04/14/10	7.61	532.70	-	-
07/22/10	8.23	532.08	-	-
10/28/10	10.44	529.87	-	-
06/14/11	6.98	533.33	-	-
08/26/11	7.42	532.89	-	-
03/29/12	7.03	533.28	-	-
08/07/12	7.53	532.78	-	-
12/05/12	8.88	531.43	-	-
03/04/13	6.58	533.73	-	-
04/03/13	6.08	534.23	-	-
04/30/13	6.26	534.05	-	-
05/07/13	5.36	534.95	-	-
08/30/13	7.08	533.23	-	-
12/13/13	8.46	531.85	-	-
05/30/14	6.80	533.51	-	-
06/01/15	6.74	533.57	-	-
05/19/16	6.95	533.36	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
03/15/10	-	-	-
04/14/10	-	-	-
07/22/10	1.1	6.11	3
10/28/10	1.01	6.23	16.7
06/14/11	1.06	6.25	11
08/26/11	NM	6.47	-6.9
03/29/12	0.2	6.23	34.4
08/07/12	1.62	6.45	94.3
12/05/12	1.63	6.77	74.6
03/04/13	-	-	-
04/03/13	-	-	-
04/30/13	-	-	-
05/07/13	2.21	6.75	182.1
08/30/13	0.21	6.28	186.8
12/13/13	1.07	6.28	44.1
05/30/14	1.22	7.03	99.8
06/01/15	1.34	7.65	164.8
05/19/16	1.82	7.72	172.3

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-3R**		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	16.13 15.14	SCREEN INTERVAL (FT):	5.04-15.04	CASING ELEV (FT ABOVE MSL):	541.30 540.31	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	<0.001	<0.001	<0.001	<0.001	0.0013	0.0013	<0.0005
07/22/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/28/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	0.0040
06/14/11	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	0.0018
08/26/11	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
03/29/12	0.0013	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/07/12	0.0014	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/05/12	0.0010	<0.001	<0.0050	<0.001	<0.001	BDL	<0.0050
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
05/07/13	0.0014	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/07/13	NOT SAMPLED - UNABLE TO ACCESS WELL						
08/30/13	0.0018	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/13/13	<0.001	<0.001	<0.005	<0.001	<0.003	BDL	<0.005
05/30/14	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/23/14	NOT SAMPLED						
01/16/15	NOT SAMPLED						
06/01/15	0.0014	<0.001	<0.001	<0.001	<0.001	BDL	0.0014
10/02/15	NOT SAMPLED						
02/01/16	NOT SAMPLED						
05/19/16	0.0010	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
10/02/16	NOT SAMPLED						
01/20/17	NOT SAMPLED						
GRP SSTLs:	**0.8320**	**0.2080**	**41.6000**	**29.1000**	**175.0000**		**0.8320**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	MW-4R		
INSTALLATION DATE:	02/24/12	WELL DEPTH (FT BTOC):	16.35 14.94	SCREEN INTERVAL (FT):	4.87-14.87	CASING ELEV (FT ABOVE MSL):	541.96 540.55	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
03/15/10	7.77	534.19	-	-
04/14/10	8.21	532.34	-	-
07/22/10	WELL DESTROYED			
10/28/10	WELL DESTROYED			
06/14/11	6.30	534.25	-	-
08/26/11	6.80	533.75	-	-
03/27/12	6.42	534.13	-	-
03/28/12	6.83	533.72	-	-
03/29/12	5.76	534.79	-	-
08/07/12	6.53	534.02	-	-
12/05/12	7.67	532.88	-	-
03/04/13	5.25	535.30	-	-
04/03/13	5.44	535.11	-	-
04/30/13	5.27	535.28	-	-
05/07/13	4.78	535.77	-	-
08/07/13	5.43	535.12	-	-
08/30/13	6.17	534.38	-	-
12/13/13	4.97	535.58	-	-
05/30/14	6.02	534.53	-	-
06/01/15	4.70	535.85	-	-
10/02/15	7.01	533.54	-	-
05/19/16	6.06	534.49	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
03/15/10	-	-	-
04/14/10	-	-	-
07/22/10	-	-	-
10/28/10	-	-	-
06/14/11	0.31	6.34	6.49
08/26/11	-	6.76	-88.8
03/27/12	-	-	-
03/28/12	-	-	-
03/29/12	1.08	6.24	28.7
08/07/12	0.83	6.63	49.1
12/05/12	0.74	6.92	56.7
03/04/13	-	-	-
04/03/13	-	-	-
04/30/13	-	-	-
05/07/13	2.36	6.86	176.8
08/07/13	1.98	6.37	146.1
08/30/13	-	-	-
12/13/13	1.1	6.34	122.4
05/30/14	0.95	6.94	134.5
06/01/15	1.13	7.55	144.7
10/02/15	1.34	7.92	138.2
05/19/16	1.33	7.4	121.5

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-4R**		
INSTALLATION DATE:	02/24/12	WELL DEPTH (FT BTOC):	16.35 14.94	SCREEN INTERVAL (FT):	4.87-14.87	CASING ELEV (FT ABOVE MSL):	541.96 540.55	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	0.0011	0.0719	0.0571	0.1058	0.4304	0.6652	0.0014
07/22/10	WELL DESTROYED						
06/14/11	<0.001	0.0112	0.0017	0.0200	0.0091	0.0420	0.0059
08/26/11	<0.001	0.0118	0.0016	0.0323	0.0048	0.0505	0.0050
03/29/12	<0.001	0.0107	0.0014	0.0210	0.0045	0.0376	0.0040
08/07/12	<0.001	0.0117	0.0016	0.0217	0.0045	0.0395	0.0053
12/05/12	<0.0010	0.0116	<0.0050	0.0172	0.0046	0.0334	0.0061
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
05/07/13	<0.001	0.0132	0.0022	0.0202	0.0066	0.0422	0.0059
08/07/13	<0.001	0.0070	0.0020	0.1600	0.0070	0.1760	0.0270
08/30/13	<0.001	0.0091	0.0020	0.0160	0.0060	0.0331	0.0060
12/13/13	<0.001	0.0081	<0.0050	0.0133	0.0057	0.0271	0.0070
05/30/14	<0.001	0.0080	0.0020	0.0120	0.0050	0.0270	<0.005
09/23/14	NOT SAMPLED						
01/16/15	NOT SAMPLED						
06/01/15	<0.001	0.0025	<0.001	0.0043	0.0024	0.0092	0.0023
10/02/15	<0.001	0.0094	0.0022	0.0146	0.0085	0.0347	0.0088
02/01/16	NOT SAMPLED						
05/19/16	<0.001	0.0050	0.0010	0.0100	0.0070	0.0230	0.0190
10/02/16	NOT SAMPLED						
01/20/17	NOT SAMPLED						
GRP SSTLs:	**0.8320**	**0.2080**	**41.6000**	**29.1000**	**175.0000**		**0.8320**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-5R**	
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	16.5 14.98	SCREEN INTERVAL (FT):	5.07-15.07	CASING ELEV (FT ABOVE MSL):	541.87 540.35	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
04/14/10	8.17	532.18	-	-
07/22/10	WELL DESTROYED			
10/28/10	WELL DESTROYED			
06/14/11	7.25	533.11	0.02	-
08/26/11	8.06	532.34	0.07	-
03/27/12	6.98	533.39	0.03	-
03/28/12	10.15	530.20		-
03/29/12	7.52	532.83		-
08/07/12	7.94	532.42	0.02	-
12/05/12	9.19	531.19	0.04	-
03/04/13	6.47	533.88		-
04/03/13	5.88	534.47		-
04/30/13	5.37	534.98		-
05/07/13	4.90	535.50	0.07	-
08/07/13	6.25	534.11	0.02	-
08/30/13	7.13	533.22	-	-
12/13/13	9.13	531.22	-	-
05/30/14	6.75	533.60	-	-
09/23/14	8.29	532.06	-	-
01/16/15	7.03	533.32	-	-
06/01/15	6.43	533.92	-	-
02/01/16	6.53	533.82	-	-
05/19/16	7.37	532.98	-	-
10/02/16	8.48	531.87	-	-
01/20/17	5.93	534.42	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
04/14/10	-	-	-
07/22/10	WELL DESTROYED		
10/28/10	WELL DESTROYED		
06/14/11	FREE PRODUCT (0.02 FT)		
08/26/11	FREE PRODUCT (0.07 FT)		
03/27/12	FREE PRODUCT (0.03 FT)		
03/28/12	-	-	-
03/29/12	1.07	6.13	34.4
08/07/12	0.94	6.24	51.7
12/05/12	FREE PRODUCT (0.04 FT)		
03/04/13	-	-	-
04/03/13	-	-	-
04/30/13	-	-	-
05/07/13	FREE PRODUCT (0.07 FT)		
08/07/13	0.95	6.76	139.4
08/30/13	-	-	-
12/13/13	2.19	6.98	107
05/30/14	0.64	7.33	192.3
09/23/14	1.36	7.91	149.7
01/16/15	1.17	9.05	164.3
06/01/15	1.74	7.81	194.5
02/01/16	1.36	7.67	174.8
05/19/16	1.81	7.61	114.5
10/02/16	1.91	7.4	102.3
01/20/17	1.86	7.24	109.5

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP		UST NUMBER:	10-02-01	WELL ID:	MW-5R		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	16.5 14.98	SCREEN INTERVAL (FT):	5.07-15.07	CASING ELEV (FT ABOVE MSL):	541.87 540.35	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	0.3568	**0.7332**	0.8265	0.0868	1.0120	2.6585	0.0229
07/22/10	WELL DESTROYED						
06/14/11	NOT SAMPLED - FREE PRODUCT (0.02 FT)						
08/26/11	NOT SAMPLED - FREE PRODUCT (0.07 FT)						
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	**7.9818**	**12.3335**	10.8592	11.7342	13.3767	48.3036	0.7763
08/07/12	**4.6636**	**13.0970**	17.3837	2.8294	16.2781	49.5882	**1.8052**
12/05/12	NOT SAMPLED - FREE PRODUCT (0.04 FT)						
05/07/13	NOT SAMPLED - FREE PRODUCT (0.07 FT)						
08/07/13	NOT SAMPLED - FREE PRODUCT (0.02 FT)						
08/30/13	0.0510	**0.2463**	0.1016	0.1220	0.6337	1.1036	0.3093
12/13/13	<0.001	0.0163	<0.0050	0.0898	0.0749	0.1810	0.1630
05/30/14	0.2600	**1.4700**	0.7550	0.2150	1.3200	3.7600	0.0660
09/23/14	0.6013	**7.4283**	7.2282	2.1406	11.0745	27.8716	**2.7030**
01/16/15	0.4880	**1.9100**	1.4000	1.5800	7.7200	12.6100	**1.6800**
06/01/15	0.2788	**1.8399**	1.3656	1.2102	4.7709	9.1866	0.8102
10/02/15	NOT SAMPLED						
02/01/16	0.0700	**1.3900**	2.8300	2.6800	11.1000	18.0000	**2.6100**
05/19/16	0.3450	**2.7100**	4.5000	5.7200	21.4000	34.3300	**19.2000**
10/02/16	0.5270	**5.6232**	5.6795	1.8657	8.0648	21.2332	**0.9238**
01/20/17	0.0181	**0.5304**	0.3171	0.1961	1.2659	2.3095	0.5591
GRP SSTLs:	**0.8320**	**0.2080**	**41.6000**	**29.1000**	**175.0000**		**0.8320**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-6**		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	16.45 14.2	SCREEN INTERVAL (FT):	4.94-14.94	CASING ELEV (FT ABOVE MSL):	542.29 540.04	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
03/15/10	8.10	534.19	-	-
04/14/10	8.49	531.55	-	-
07/22/10	9.51	530.53	-	-
10/28/10	10.16	529.88	-	-
06/14/11	6.41	533.63	-	-
08/26/11	7.13	532.91	-	-
03/29/12	6.46	533.58	-	-
08/07/12	7.04	532.83	-	-
12/05/12	8.12	531.92	-	-
03/04/13	5.81	534.23	-	-
04/03/13	6.11	533.93	-	-
04/30/13	5.04	535.00	-	-
05/07/13	4.63	535.41	-	-
08/07/13	5.57	534.47	-	-
08/30/13	6.42	533.62	-	-
12/13/13	7.98	532.06	-	-
05/30/14	5.97	534.07	-	-
09/23/14	5.39	534.65	-	-
01/16/15	6.28	533.76	-	-
06/01/15	5.90	534.14	-	-
10/02/15	7.31	532.73	-	-
02/01/16	6.28	533.76	-	-
05/19/16	6.40	533.64	-	-
10/02/16	7.18	532.86	-	-
01/20/17	7.42	532.62	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
03/15/10	-	-	-
04/14/10	-	-	-
07/22/10	1.47	6.55	-5.1
10/28/10	1.36	6.51	-10.3
06/14/11	1.45	6.5	-14.6
08/26/11	NM	6.84	-82.4
03/29/12	1.43	6.44	17.9
08/07/12	5.36	6.97	7
12/05/12	1.84	8.02	-116.3
03/04/13	-	-	-
04/03/13	-	-	-
04/30/13	-	-	-
05/07/13	2.58	6.55	188.9
08/07/13	2.76	6.33	207.3
08/30/13	-	-	-
12/13/13	1.73	7.07	41.1
05/30/14	1.66	7.14	136.4
09/23/14	1.95	7.24	161.8
01/16/15	1.17	9.05	164.3
06/01/15	1.35	7.29	156.3
10/02/15	1.33	7.34	144.5
02/01/16	1.94	7.26	174
05/19/16	1.14	7.3	112.3
10/02/16	1.42	7.19	186.2
01/20/17	1.37	7.31	160.4

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-6**	
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	16.45 14.2	SCREEN INTERVAL (FT):	4.94-14.94	CASING ELEV (FT ABOVE MSL):	542.29 540.04	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	0.0183	**0.7702**	1.0642	1.1012	3.8399	6.7755	0.2727
07/22/10	0.0307	**1.0910**	1.1808	1.1288	4.2279	7.6285	0.4495
10/28/10	0.0110	**0.6746**	0.5108	0.7771	2.1886	4.1511	0.2809
06/14/11	0.0232	**0.6168**	0.1322	0.5747	0.5929	1.9166	0.2466
08/26/11	0.0154	**0.6390**	0.2263	0.6997	0.8664	2.4314	0.2356
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	0.0237	**0.9231**	0.6482	0.8614	2.1661	4.5988	0.4046
08/07/12	0.0335	**1.1473**	0.6566	1.0526	2.3035	5.1600	0.3788
12/05/12	0.0070	0.0090	0.0069	0.0097	0.0265	0.0521	0.0064
05/07/13	0.0164	**1.3267**	0.7454	0.8858	3.2131	6.1710	0.3472
08/07/13	0.0250	**0.8640**	0.3390	0.8280	1.9700	4.0010	0.0940
08/30/13	0.0304	**1.1831**	0.4418	0.7821	1.8561	4.2631	0.2125
12/13/13	<0.002	**0.5360**	0.2370	0.6870	2.1420	3.6020	0.7680
05/30/14	0.0350	**0.3230**	0.1580	0.3350	1.3700	2.1860	0.2800
09/23/14	0.0625	**0.7028**	0.5086	1.2534	4.2993	6.7641	**1.0271**
01/16/15	0.0160	**0.5900**	0.2280	0.5880	1.3800	2.7860	0.7420
06/01/15	0.0439	**0.2363**	0.0829	0.1651	0.6496	1.1339	0.1939
10/02/15	0.0451	**0.6048**	0.2120	0.5727	1.1079	2.4974	0.4259
02/01/16	0.0250	**0.3270**	0.0970	0.2700	0.5280	1.2220	0.1210
05/19/16	0.0620	**0.7360**	0.2290	0.6380	1.4400	3.0430	**1.9900**
10/02/16	0.0606	**0.5085**	0.2049	0.3289	1.2652	2.3075	0.5438
01/20/17	0.0255	**0.4859**	0.1686	0.3447	0.7615	1.7607	0.2764
GRP SSTLs:	**0.8320**	**0.2080**	**41.6000**	**29.1000**	**175.0000**		**0.8320**
Inhalation SSTLs:	48000.0000	89.1000	526.0000	169.0000	175.0000		31.0000

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-7**	
INSTALLATION DATE:	-	WELL DEPTH (FT BTOC):	16.11	SCREEN INTERVAL (FT):	-	CASING ELEV (FT ABOVE MSL):	541.10	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
03/15/10	7.70	533.40	-	-
04/14/10	7.69	533.41	-	-
07/22/10	8.25	532.85	-	-
10/28/10	WELL DESTROYED			

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
03/15/10	-	-	-
04/14/10	-	-	-
07/22/10	1.93	6.08	13.9
10/28/10	WELL DESTROYED		

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-7**	
INSTALLATION DATE:	-	WELL DEPTH (FT BTOC):	16.11	SCREEN INTERVAL (FT):	-	CASING ELEV (FT ABOVE MSL):	541.10	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
07/22/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/28/10	WELL DESTROYED						
GRP SSTLs:	**0.4750**	**0.1190**	**23.7000**	**16.6000**	**175.0000**		**0.4750**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-8**		
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	16.88 14.47	SCREEN INTERVAL (FT):	4.91-14.91	CASING ELEV (FT ABOVE MSL):	542.06 539.65	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
07/22/10	9.31	530.34	-	-
10/28/10	9.40	530.25	-	-
06/14/11	7.62	532.03	-	-
08/26/11	7.03	532.62	-	-
03/27/12	6.29	533.36	-	-
03/28/12	7.23	532.42	-	-
03/29/12	6.96	532.69	-	-
08/07/12	7.20	532.45	-	-
12/05/12	8.44	531.21	-	-
03/04/13	6.22	533.43	-	-
04/03/13	6.37	533.28	-	-
04/30/13	6.90	532.75	-	-
05/07/13	5.90	533.75	-	-
08/07/13	6.03	533.62	-	-
08/30/13	6.62	533.03	-	-
12/13/13	9.02	530.63	-	-
05/30/14	6.40	533.25	-	-
09/23/14	7.69	531.96	-	-
01/16/15	6.84	532.81	-	-
06/01/15	6.40	533.25	-	-
10/02/15	5.65	534.00	-	-
02/01/16	6.50	533.15	-	-
05/19/16	6.57	533.08	-	-
10/02/16	8.15	531.50	-	-
01/20/17	8.54	531.11	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
07/22/10	1.47	6.64	19.1
10/28/10	1.37	6.6	25.3
06/14/11	1.46	6.58	30.3
08/26/11	NM	6.7	94.4
03/27/12	-	-	-
03/28/12	-	-	-
03/29/12	1.13	6.06	57.4
08/07/12	1.79	6.44	83.6
12/05/12	1.03	6.35	82.3
03/04/13	-	-	-
04/03/13	-	-	-
04/30/13	-	-	-
05/07/13	1.78	6.83	137.1
08/07/13	1.98	6.94	145.9
08/30/13	-	-	-
12/13/13	1.13	6.92	133.1
05/30/14	1.94	7.28	88.4
09/23/14	1.21	7.86	122.5
01/16/15	1.34	7.28	119.8
06/01/15	1.84	7.99	128.2
10/02/15	1.91	7.49	187.2
02/01/16	1.66	7.4	194.6
05/19/16	1.61	7.71	150.3
10/02/16	1.91	7.76	184.6
01/20/17	1.64	7.62	173.2

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-8**	
INSTALLATION DATE:	02/24/10	WELL DEPTH (FT BTOC):	16.88 14.47	SCREEN INTERVAL (FT):	4.91-14.91	CASING ELEV (FT ABOVE MSL):	542.06 539.65	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	0.0141	0.0544	0.0501	0.0790	0.3039	0.4874	0.0006
07/22/10	0.0090	0.0841	0.0139	0.0427	0.1879	0.3286	0.0174
10/28/10	0.0083	0.0825	0.0178	0.0822	0.0649	0.2474	0.0103
06/14/11	0.0220	0.0873	0.0255	0.2468	0.3859	0.7455	0.0453
08/26/11	0.0197	0.0894	0.0175	0.1391	0.0951	0.3411	0.0198
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	0.0222	0.0711	0.0271	0.1400	0.1636	0.4018	0.0352
08/07/12	0.0164	0.0957	0.0453	0.2321	0.2181	0.5912	0.0629
12/05/12	<0.0100	0.0987	<0.0500	0.1880	0.0991	0.3858	0.0593
05/07/13	0.0233	0.1769	0.0602	0.1785	0.1838	0.5994	0.0256
08/07/13	0.0110	0.0710	0.0980	0.1280	0.3490	0.6460	0.0660
08/30/13	0.0173	0.1324	0.1155	0.1920	0.5104	0.9503	0.0352
12/13/13	0.0178	0.0998	0.0184	0.0897	0.0575	0.2654	0.0211
05/30/14	0.0290	0.1080	0.1410	0.2270	1.5600	2.0360	0.0440
09/23/14	0.0251	0.0982	0.0342	0.1254	0.4521	0.7099	0.0249
01/16/15	0.0290	0.0980	0.0200	0.0660	0.1040	0.2880	0.0250
06/01/15	0.0372	0.1206	0.0544	0.1396	0.5351	0.8497	0.0298
10/02/15	0.0432	0.1916	0.0166	0.1221	0.1139	0.4442	0.0546
02/01/16	0.0550	0.1170	0.0110	0.0650	0.1030	0.2960	0.0150
05/19/16	0.0420	0.0930	0.0090	0.0610	0.1380	0.3010	0.0150
10/02/16	0.0402	0.0762	0.0045	0.0553	0.0368	0.1728	0.0118
01/20/17	0.0874	0.1381	0.0118	0.0862	0.0512	0.2873	0.0145
GRP SSTLs:	**0.8320**	**0.2080**	**41.6000**	**29.1000**	**175.0000**		**0.8320**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-9**	
INSTALLATION DATE:	-	WELL DEPTH (FT BTOC):	15.35	SCREEN INTERVAL (FT):	-	CASING ELEV (FT ABOVE MSL):	541.48	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
04/14/10	7.99	533.49	-	-
07/22/10	9.10	532.38	-	-
10/28/10	WELL DESTROYED			

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
04/14/10	-	-	-
07/22/10	1.02	6.24	17.2
10/28/10	WELL DESTROYED		

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-9**	
INSTALLATION DATE:	-	WELL DEPTH (FT BTOC):	15.35	SCREEN INTERVAL (FT):	-	CASING ELEV (FT ABOVE MSL):	541.48	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
04/14/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
07/22/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/28/10	WELL DESTROYED						
GRP SSTLs:	**0.5680**	**0.1420**	**28.4000**	**19.9000**	**175.0000**		**0.5680**
Inhalation SSTLs:	48000.0000	89.1000	526.0000	169.0000	175.0000		31.0000

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-10R**		
INSTALLATION DATE:	04/13/10	WELL DEPTH (FT BTOC):	13.98 14.99	SCREEN INTERVAL (FT):	3.98-13.98	CASING ELEV (FT ABOVE MSL):	540.54	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
04/14/10	4.47	536.07	-	-
07/22/10	4.34	536.20	-	-
10/28/10	WELL DESTROYED			
06/14/11	5.04	535.50	-	-
08/26/11	5.15	535.39	-	-
03/27/12	4.61	535.93	-	-
03/28/12	4.81	535.73	-	-
03/29/12	4.87	535.67	-	-
08/07/12	5.00	535.54	-	-
12/05/12	7.50	533.04	-	-
05/07/13	4.46	536.08	-	-
08/07/13	4.93	535.61	-	-
08/30/13	5.03	535.51	-	-
12/13/13	7.47	533.07	-	-
05/30/14	4.83	535.71	-	-
06/01/15	3.26	537.28	-	-
05/19/16	6.87	533.67	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
04/14/10	-	-	-
07/22/10	1.3	6.31	-2.5
10/28/10	WELL DESTROYED		
06/14/11	1.32	6.25	-8.4
08/26/11	-	6.19	64.3
03/27/12	-	-	-
03/28/12	-	-	-
03/29/12	3.25	5.81	103.3
08/07/12	1.72	6.71	111.3
12/05/12	1.09	6.84	81.4
05/07/13	2.77	6.85	97
08/07/13	2.49	6.97	117.5
08/30/13	-	-	-
12/13/13	1.22	6.76	128.3
05/30/14	0.46	6.34	97.8
06/01/15	1.92	7.42	134.5
05/19/16	1.53	7.22	170.2

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-10R**	
INSTALLATION DATE:	04/13/10	WELL DEPTH (FT BTOC):	13.98 14.99	SCREEN INTERVAL (FT):	3.98-13.98	CASING ELEV (FT ABOVE MSL):	540.54	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
04/14/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
07/22/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/28/10	WELL DESTROYED						
06/14/11	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/26/11	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	0.0014
08/07/12	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/05/12	<0.0010	<0.0010	<0.0050	<0.0010	<0.001	BDL	<0.005
05/07/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/07/13	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.001
08/30/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/13/13	<0.001	<0.001	<0.005	<0.001	<0.003	BDL	<0.005
05/30/14	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/23/14	NOT SAMPLED						
01/16/15	NOT SAMPLED						
06/01/15	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/02/15	NOT SAMPLED						
02/01/16	NOT SAMPLED						
06/01/15	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
10/02/16	NOT SAMPLED						
01/20/17	NOT SAMPLED						
GRP SSTLs:	**0.5040**	**0.1260**	**25.2000**	**17.6000**	**175.0000**		**0.5040**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-11**	
INSTALLATION DATE:	04/13/10	WELL DEPTH (FT BTOC):	12.9	SCREEN INTERVAL (FT):	-	CASING ELEV (FT ABOVE MSL):	539.46	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
04/14/10	10.39	529.07	-	-
07/22/10	10.52	528.94	-	-
10/28/10	10.39	529.07	-	-
06/14/11	10.51	528.95	-	-
08/26/11	10.56	528.90	-	-
03/29/12	9.48	529.98	-	-
08/07/12	6.96	532.50	-	-
12/05/12	9.51	529.95	-	-
05/07/13	8.95	530.51	-	-
08/07/13	9.38	530.08	-	-
08/30/13	9.52	529.94	-	-
05/19/16	WELL DESTROYED			

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
04/14/10	-	-	-
07/22/10	0.23	6.53	-57.1
10/28/10	0.58	6.48	-63.6
06/14/11	0.33	6.47	-71.6
08/26/11	-	7.18	-124.9
03/29/12	2.68	6.38	99.5
08/07/12	0.83	6.95	2.6
12/05/12	0.08	7	53.8
05/07/13	2.74	6.59	182.4
08/07/13	2.47	6.05	192.6
08/30/13	-	-	-
05/19/16	WELL DESTROYED		

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-11**	
INSTALLATION DATE:	04/13/10	WELL DEPTH (FT BTOC):	12.9	SCREEN INTERVAL (FT):	-	CASING ELEV (FT ABOVE MSL):	539.46	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
04/14/10	0.0017	<0.001	<0.001	<0.001	<0.001	BDL	**0.5090**
07/22/10	0.0028	<0.001	<0.001	<0.001	<0.001	BDL	**0.4540**
10/28/10	0.0013	<0.001	<0.001	<0.001	<0.001	BDL	<0.006
06/14/11	0.0011	0.0043	<0.001	<0.001	<0.001	0.0043	**0.1800**
08/26/11	0.0014	<0.001	<0.001	<0.001	<0.001	BDL	**0.5370**
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	**0.1050**
08/07/12	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	0.0420
12/05/12	<0.0010	<0.0010	<0.0050	<0.0010	<0.001	BDL	**0.1240**
05/07/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	-
08/07/13	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	-
08/30/13	<0.001	<0.001	0.0013	<0.001	<0.001	0.0013	-
12/13/13	NOT SAMPLED - NOT PART OF SAMPLING SUITE						
05/30/14	NOT SAMPLED - NOT PART OF SAMPLING SUITE						
09/23/14	NOT SAMPLED						
01/16/15	NOT SAMPLED						
06/01/15	NOT SAMPLED						
10/02/15	NOT SAMPLED						
02/01/16	NOT SAMPLED						
05/19/16	WELL DESTROYED						
GRP SSTLs:	**0.0954**	**0.0239**	**4.7700**	**3.3400**	**47.7000**		**0.0954**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	MW-12		
INSTALLATION DATE:	04/13/10	WELL DEPTH (FT BTOC):	15.1	SCREEN INTERVAL (FT):	5.02-15.02	CASING ELEV (FT ABOVE MSL):	539.60	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
04/14/10	6.90	532.70	-	-
07/22/10	7.49	532.11	-	-
10/28/10	8.99	530.61	-	-
06/14/11	6.64	532.96	-	-
08/26/11	7.94	531.66	-	-
03/29/12	5.82	533.78	-	-
08/07/12	6.51	533.09	-	-
12/05/12	8.49	531.11	-	-
05/07/13	4.03	535.57	-	-
08/07/13	4.72	534.88	-	-
08/30/13	5.77	533.83	-	-
05/30/14	6.43	533.17	-	-
06/01/15	4.17	535.43	-	-
05/19/16	5.49	534.11	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
04/14/10	-	-	-
07/22/10	1.67	6.59	-18.2
10/28/10	1.58	6.49	-43.7
06/14/11	0.56	6.5	-65
08/26/11	-	7.32	-129.7
03/29/12	0.29	6.59	121.4
08/07/12	0.12	7.14	-56
12/05/12	1.27	7.11	64.2
05/07/13	3	7.07	164.3
08/07/13	2.89	7.23	145.5
08/30/13	-	-	-
05/30/14	0.984	7.34	-
06/01/15	1.87	7.39	143.5
05/19/16	1.52	7.61	131.4

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**MW-12**	
INSTALLATION DATE:	04/13/10	WELL DEPTH (FT BTOC):	15.1	SCREEN INTERVAL (FT):	5.02-15.02	CASING ELEV (FT ABOVE MSL):	539.60	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
04/14/10	0.0070	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
07/22/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/28/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
06/14/11	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/26/11	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
03/29/12	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/07/12	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/05/12	<0.0010	<0.0010	<0.0050	<0.0010	<0.001	BDL	<0.005
03/27/12	**CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION**						
05/07/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/07/13	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.001
08/30/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/13/13	NOT SAMPLED - NOT PART OF SAMPLING SUITE						
05/30/14	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/23/14	NOT SAMPLED						
01/16/15	NOT SAMPLED						
06/01/15	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/02/15	**NOT SAMPLED**						
02/01/16	**NOT SAMPLED**						
06/01/15	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
10/02/16	NOT SAMPLED						
01/20/17	NOT SAMPLED						
GRP SSTLs:	**0.2630**	**0.0659**	**13.2000**	**9.2200**	**132.0000**		**0.2630**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	MW-13		
INSTALLATION DATE:	04/13/10	WELL DEPTH (FT BTOC):	15.06	SCREEN INTERVAL (FT):	4.98-14.98	CASING ELEV (FT ABOVE MSL):	538.92	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
04/14/10	7.09	531.83	-	-
07/22/10	7.63	531.29	-	-
10/28/10	9.05	529.87	-	-
06/14/11	7.09	531.83	-	-
08/26/11	7.82	531.10	-	-
03/29/12	6.27	532.65	-	-
08/07/12	7.80	531.12	-	-
12/05/12	8.50	530.42	-	-
05/07/13	3.22	535.70	-	-
08/30/13	6.93	531.99	-	-
12/13/13	9.15	529.77	-	-
05/30/14	6.28	532.64	-	-
01/16/15	5.48	533.44	-	-
06/01/15	5.00	533.92	-	-
05/19/16	5.86	533.06	-	-
10/02/16	7.64	531.28	-	-
01/20/17	5.69	533.23	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
04/14/10	-	-	-
07/22/10	1.07	6.33	5.1
10/28/10	1.01	6.29	9.3
06/14/11	1.1	6.34	0.3
08/26/11	-	6.67	-44.5
03/29/12	0.16	6.67	146.8
08/07/12	1.04	6.95	-7.3
12/05/12	0.73	7.18	50.9
05/07/13	3.35	7.12	158.9
08/30/13	1.08	6.92	134.4
12/13/13	0.87	6.13	28.8
05/30/14	1.08	7.01	123.8
01/16/15	1.66	7.65	134.8
06/01/15	1.53	7.11	194.5
05/19/16	1.42	7.49	112.8
10/02/16	1.17	7.3	194.3
01/20/17	1.25	7.26	183.6

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	MW-13		
INSTALLATION DATE:	04/13/10	WELL DEPTH (FT BTOC):	15.06	SCREEN INTERVAL (FT):	4.98-14.98	CASING ELEV (FT ABOVE MSL):	538.92	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
04/14/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
07/22/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/28/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
06/14/11	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/26/11	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/07/12	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/05/12	<0.0010	<0.0010	<0.0050	<0.0010	<0.001	BDL	<0.005
05/07/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/07/13	NOT SAMPLED						
08/30/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/13/13	<0.001	<0.001	<0.005	<0.001	<0.003	BDL	<0.005
05/30/14	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/23/14	NOT SAMPLED						
01/16/15	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
06/01/15	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/02/15	NOT SAMPLED						
02/01/16	NOT SAMPLED						
06/01/15	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
10/02/16	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
01/20/17	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
GRP SSTLs:	**0.3310**	**0.0829**	**16.6000**	**11.6000**	**166.0000**		**0.3310**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	VW-1R		
INSTALLATION DATE:	02/25/10	WELL DEPTH (FT BTOC):	37.91 40.42	SCREEN INTERVAL (FT):	33.31-35.81	CASING ELEV (FT ABOVE MSL):	542.04 541.04	WELL TYPE: DIAMETER (IN):	III 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
03/15/10	28.81	513.23	-	-
04/14/10	30.26	510.78	-	-
07/22/10	32.79	508.25	-	-
10/28/10	WELL DESTROYED			
06/14/11	26.89	514.15	-	-
08/26/11	28.83	512.21	-	-
03/27/12	27.37	513.67	-	-
03/28/12	26.72	514.32	-	-
03/29/12	23.73	517.31	-	-
08/07/12	26.67	514.37	-	-
12/05/12	29.17	511.87	-	-
05/07/13	24.36	516.68	-	-
08/07/13	25.83	515.21	-	-
08/30/13	24.99	516.05	-	-
12/13/13	27.55	513.49	-	-
05/30/14	24.87	516.17	-	-
09/23/14	25.91	515.13	-	-
06/01/15	22.35	518.69	-	-
02/01/16	22.32	518.72	-	-
05/19/16	20.31	520.73	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
03/15/10	-	-	-
04/14/10	-	-	-
07/22/10	4.78	7.22	-9.7
10/28/10	WELL DESTROYED		
06/14/11	4.64	7.12	-12.2
08/26/11	-	10.65	-132.8
03/27/12	-	-	-
03/28/12	-	-	-
03/29/12	0.56	6.51	-38.8
08/07/12	2.42	10.01	21.5
12/05/12	4.98	10.25	-18.4
05/07/13	0.51	9.23	17.6
08/07/13	1.49	8.96	18.6
08/30/13	-	-	-
12/13/13	1.41	8.91	71.4
05/30/14	1.37	8.33	64.8
09/23/14	1.75	7.97	167.2
06/01/15	1.92	7.28	197.2
02/01/16	-	-	-
05/19/16	1.61	7.73	112.5

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	VW-1R		
INSTALLATION DATE:	02/25/10	WELL DEPTH (FT BTOC):	37.91 40.42	SCREEN INTERVAL (FT):	33.31-35.81	CASING ELEV (FT ABOVE MSL):	542.04 541.04	WELL TYPE: DIAMETER (IN):	III 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
03/15/10	**0.8438**	0.0015	0.0035	0.0035	0.0155	0.0240	0.0056
07/22/10	**1.6037**	<0.005	<0.005	<0.005	<0.005	BDL	<0.005
10/28/10	WELL DESTROYED						
06/14/11	<0.001	<0.001	<0.001	<0.001	0.0012	0.0012	<0.001
08/26/11	<0.001	<0.001	0.0011	<0.001	<0.001	0.0011	<0.001
03/27/12	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
03/29/12	<0.001	<0.001	0.0013	<0.001	0.0024	0.0037	<0.001
08/07/12	<0.001	<0.001	0.0013	<0.001	<0.001	0.0013	<0.001
12/05/12	<0.0010	<0.0010	<0.0050	<0.0010	<0.001	BDL	<0.005
05/07/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
08/07/13	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.001
08/30/13	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
12/13/13	<0.001	<0.001	<0.005	<0.001	<0.003	BDL	<0.005
05/30/14	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
09/23/14	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
01/16/15	NOT SAMPLED						
06/01/15	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/02/15	NOT SAMPLED						
02/01/16	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
06/01/15	<0.001	<0.001	<0.001	<0.001	<0.003	BDL	<0.005
10/02/16	NOT SAMPLED						
01/20/17	NOT SAMPLED						
GRP SSTLs:	**0.7480**	**0.1870**	**37.4000**	**26.2000**	**175.0000**		**0.7480**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**VW-2**	
INSTALLATION DATE:	-	WELL DEPTH (FT BTOC):	49.4	SCREEN INTERVAL (FT):	-	CASING ELEV (FT ABOVE MSL):	540.64	WELL TYPE: III DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
04/14/10	35.50	505.14	-	-
07/22/10	32.09	508.55	-	-
10/28/10	WELL DESTROYED			

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
04/14/10	-	-	-
07/22/10	1.62	6.86	-60.7
10/28/10	WELL DESTROYED		

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**VW-2**	
INSTALLATION DATE:	-	WELL DEPTH (FT BTOC):	49.4	SCREEN INTERVAL (FT):	-	CASING ELEV (FT ABOVE MSL):	540.64	WELL TYPE: III DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
04/14/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
07/22/10	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001
10/28/10	WELL DESTROYED						
GRP SSTLs:	**0.7340**	**0.1830**	**36.7000**	**25.7000**	**175.0000**		**0.7340**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**RW-1**		
INSTALLATION DATE:	07/06/13	WELL DEPTH (FT BTOC):	14.88	SCREEN INTERVAL (FT):	4.38-14.38	CASING ELEV (FT ABOVE MSL):	540.23	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
08/07/13	7.51	532.72	-	-
08/30/13	7.57	532.66	0.02	-
12/13/13	8.04	532.19	0.02	-
05/30/14	7.31	532.92	0.05	-
09/23/14	7.67	532.56	-	-
01/16/15	7.22	533.01	-	-
06/01/15	6.97	533.26	-	-
10/02/15	8.43	531.80	-	-
02/01/16	6.96	533.27	-	-
05/19/16	7.62	532.61	-	-
10/02/16	8.90	531.34	0.09	-
01/20/17	6.02	534.21	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
08/07/13	-	-	-
08/30/13	FREE PRODUCT (0.02 FT)		
12/13/13	FREE PRODUCT (0.02 FT)		
05/30/14	FREE PRODUCT (0.05 FT)		
09/23/14	-	-	-
01/16/15	-	-	-
06/01/15	1.43	7.81	136.5
10/02/15	1.23	7.83	162.5
02/01/16	1.34	7.61	178.3
05/19/16	1.8	7.22	124.5
10/02/16	FREE PRODUCT (0.09 FT)		
01/20/17	1.43	7.31	147.4

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**RW-1**	
INSTALLATION DATE:	07/06/13	WELL DEPTH (FT BTOC):	14.88	SCREEN INTERVAL (FT):	4.38-14.38	CASING ELEV (FT ABOVE MSL):	540.23	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
3/27/2012	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
08/07/13	**1.2100**	**6.0200**	13.2000	6.0200	26.1000	51.3400	**1.0000**
08/30/13	NOT SAMPLED - FREE PRODUCT (0.02 FT)						
12/13/13	NOT SAMPLED - FREE PRODUCT (0.02 FT)						
05/30/14	NOT SAMPLED - FREE PRODUCT (0.05 FT)						
09/23/14	0.6657	**3.8476**	6.4814	1.4759	9.7264	21.5313	**1.1402**
01/16/15	0.1000	**0.6500**	0.8080	0.2380	2.6200	4.3160	0.5020
06/01/15	<0.05	0.0717	0.4268	0.4311	1.8352	2.7648	0.2682
10/02/15	0.5778	**4.4080**	5.2077	1.9382	8.0358	19.5897	**0.9888**
02/01/16	<0.001	0.0430	0.3640	0.5450	4.1500	5.1020	**2.3800**
05/19/16	0.4160	**4.4800**	9.2800	7.4000	31.4000	52.5600	**23.2000**
10/02/16	NOT SAMPLED - FREE PRODUCT (0.09 FT)						
01/20/17	0.0084	**0.3820**	0.5508	0.2470	2.2831	3.4629	0.2999
GRP SSTLs:	**0.8320**	**0.2080**	**41.6000**	**29.1000**	**175.0000**		**0.8320**
Inhalation SSTLs:	48000.0000	89.1000	526.0000	169.0000	175.0000		31.0000

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	RW-2		
INSTALLATION DATE:	07/06/13	WELL DEPTH (FT BTOC):	15.05	SCREEN INTERVAL (FT):	4.55-14.55	CASING ELEV (FT ABOVE MSL):	538.25	WELL TYPE: DIAMETER (IN):	II 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

POTENTIOMETRIC ELEVATION SUMMARY

MEASUREMENT DATE	DEPTH TO WATER (FT BTOC)	ELEVATION (FT ABOVE MSL)	FREE PRODUCT THICKNESS (FT)	PCW GALLONS CONTAINERIZED
08/07/13	9.80	528.45	-	-
08/30/13	6.15	532.10	-	-
12/13/13	15.05	523.20	-	-
05/30/14	5.91	532.34	-	-
09/23/14	7.23	531.02	-	-
01/16/15	6.37	531.88	-	-
06/01/15	8.60	529.65	-	-
10/02/15	7.18	531.07	-	-
02/01/16	5.91	532.34	-	-
05/19/16	6.02	532.23	-	-
01/20/17	8.10	530.15	-	-

INTRINSIC GROUNDWATER DATA SUMMARY

SAMPLE DATE	DISSOLVED OXYGEN (mg/L)	pH	REDOX POTENTIAL (mV)
08/07/13	1.28	6.85	64.8
08/30/13	-	-	-
12/13/13	1.11	7.12	93.3
05/30/14	1.18	7.57	106.3
09/23/14	132	7.16	183.1
01/16/15	1.17	7.4	104.5
06/01/15	1.38	7.68	136.9
10/02/15	1.28	7.16	194.5
02/01/16	1.4	7.82	145.6
05/19/16	1.14	7.61	180.3
01/20/17	1.46	7.42	130.8

Monitoring Point Data Summary Table

SITE NAME:	Former Hanceville BP			UST NUMBER:	10-02-01	WELL ID:	**RW-2**	
INSTALLATION DATE:	07/06/13	WELL DEPTH (FT BTOC):	15.05	SCREEN INTERVAL (FT):	4.55-14.55	CASING ELEV (FT ABOVE MSL):	538.25	WELL TYPE: II DIAMETER (IN): 2

Notes: BTOC (Below Top of Casing); MSL (Mean Sea Level); BDL (Below Detection Limit); CA (Corrective Action)

GROUNDWATER ANALYTICAL SUMMARY (mg/L)

SAMPLE DATE	MTBE	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	TOTAL BTEX	NAPHTHALENE
3/27/2012	CORRECTIVE ACTION VIA MOBILE ENHANCED MULTI-PHASE EXTRACTION						
08/07/13	0.1600	0.1420	0.0310	0.0710	0.1590	0.4030	0.0230
08/30/13	0.1172	0.1418	0.0472	0.2583	0.4762	0.9235	0.0347
12/13/13	0.0543	**0.2470**	0.0255	0.2870	0.5535	1.1130	0.0835
05/30/14	0.0790	0.0870	0.0333	0.2730	0.7750	1.1683	0.0870
09/23/14	0.0652	0.0848	0.0143	0.1535	0.2937	0.5463	0.0596
01/16/15	0.1250	0.1430	0.0150	0.1480	0.2980	0.6040	0.0890
06/01/15	0.0466	0.0606	0.0119	0.0921	0.1298	0.2944	0.0295
10/02/15	0.0415	**0.2460**	0.0280	0.1852	0.2739	0.7331	0.0628
02/01/16	0.1130	0.1600	0.0180	0.1630	0.2260	0.5670	0.0530
05/19/16	0.0460	0.1000	0.0080	0.0660	0.0740	0.2480	0.0700
10/02/16	NOT SAMPLED						
01/20/17	0.0789	0.1569	0.0097	0.0717	0.0575	0.2958	0.0234
GRP SSTLs:	**0.8230**	**0.2060**	**41.2000**	**28.8000**	**175.0000**		**0.8230**
Inhalation SSTLs:	**48000.0000**	**89.1000**	**526.0000**	**169.0000**	**175.0000**		**31.0000**

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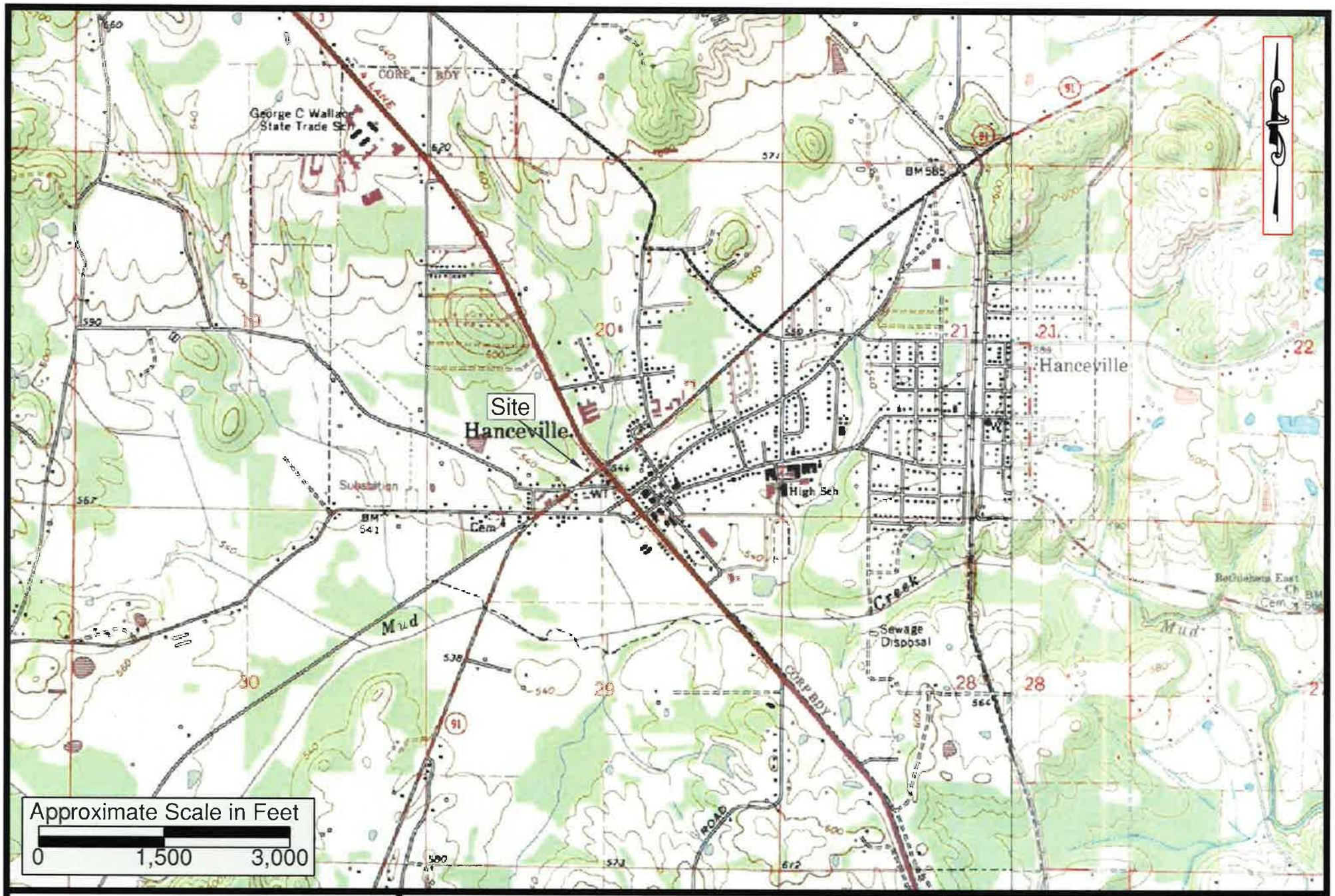
Figures



Former Hanceville BP
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321000329

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ALBERTVILLE, ALABAMA
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AUBURN, ALABAMA
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(205) 733-9431
DOTHAN, ALABAMA
(334) 677-9431
HUNTSVILLE, ALABAMA
(256) 539-7470

Figure 1
Topographic Map

Prepared By: C. Elliott

Former Hanceville BP
US Hwy 31 and AL Hwy 91
Hanceville, Cullman County, AL
321000329

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Figure 2
Site Vicinity Map

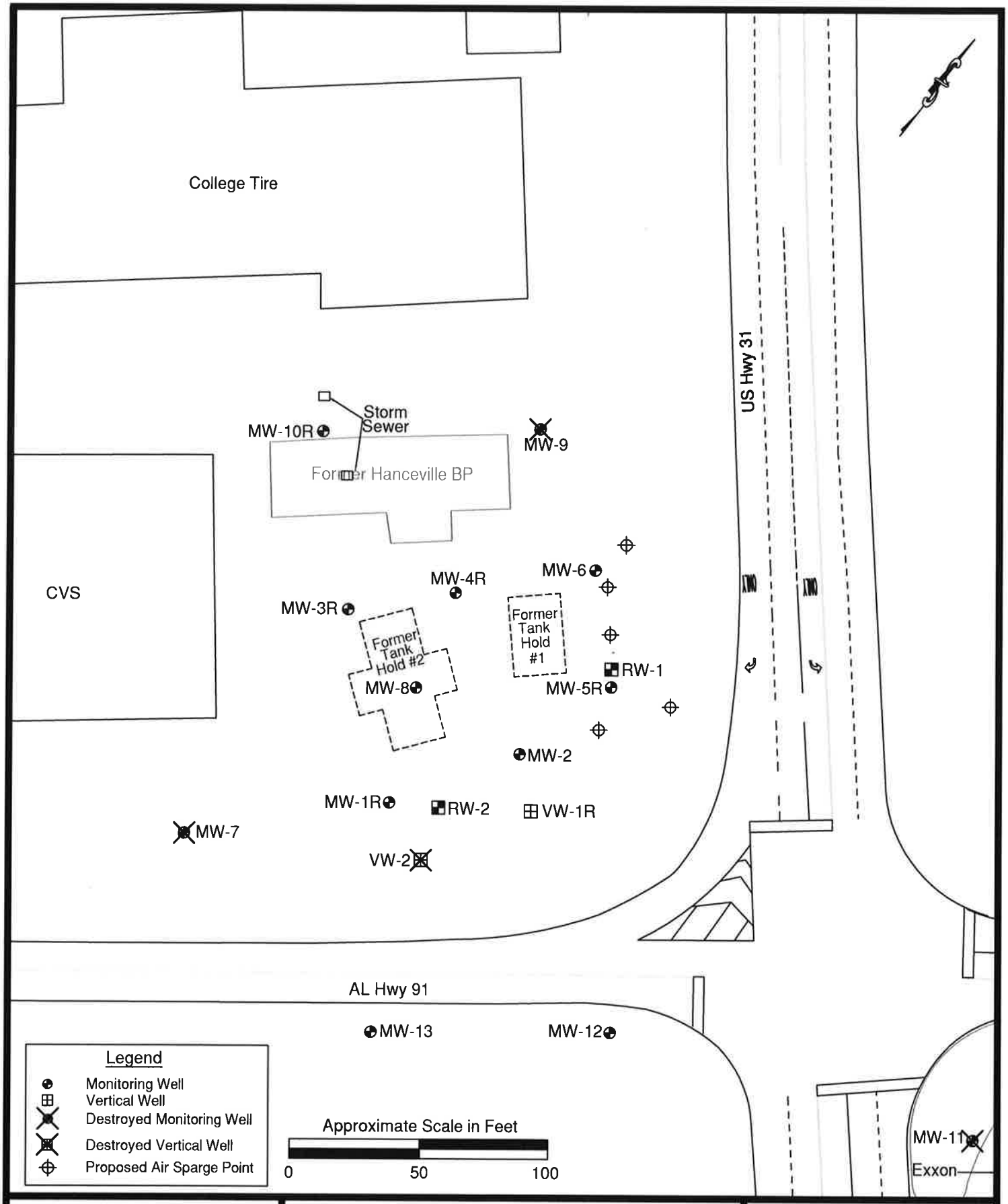

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Figure 3
Proposed Air Sparge
Location Map

Drawing Prepared By: S. Booker

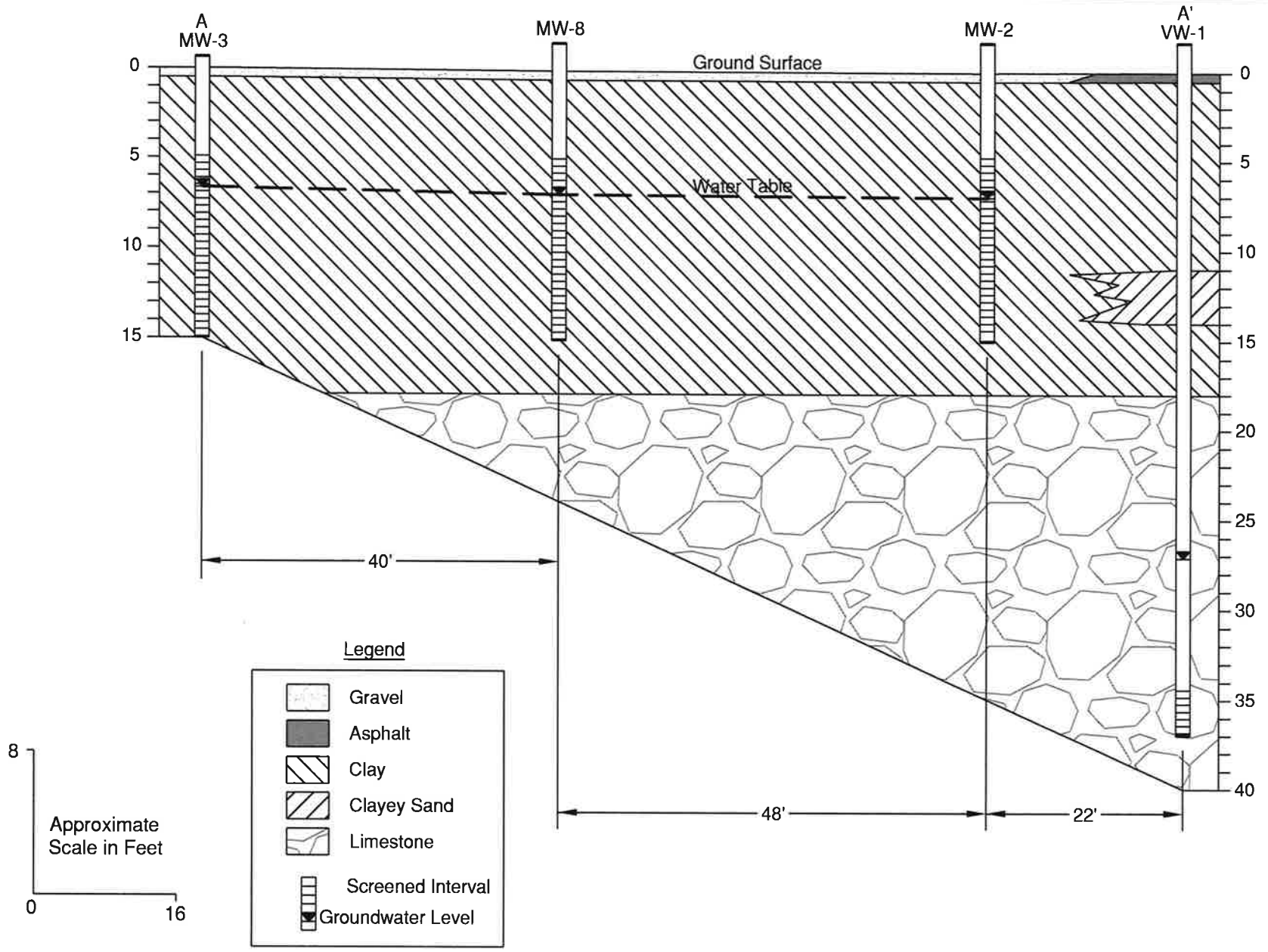

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Figure 4
Lithologic Cross-Section

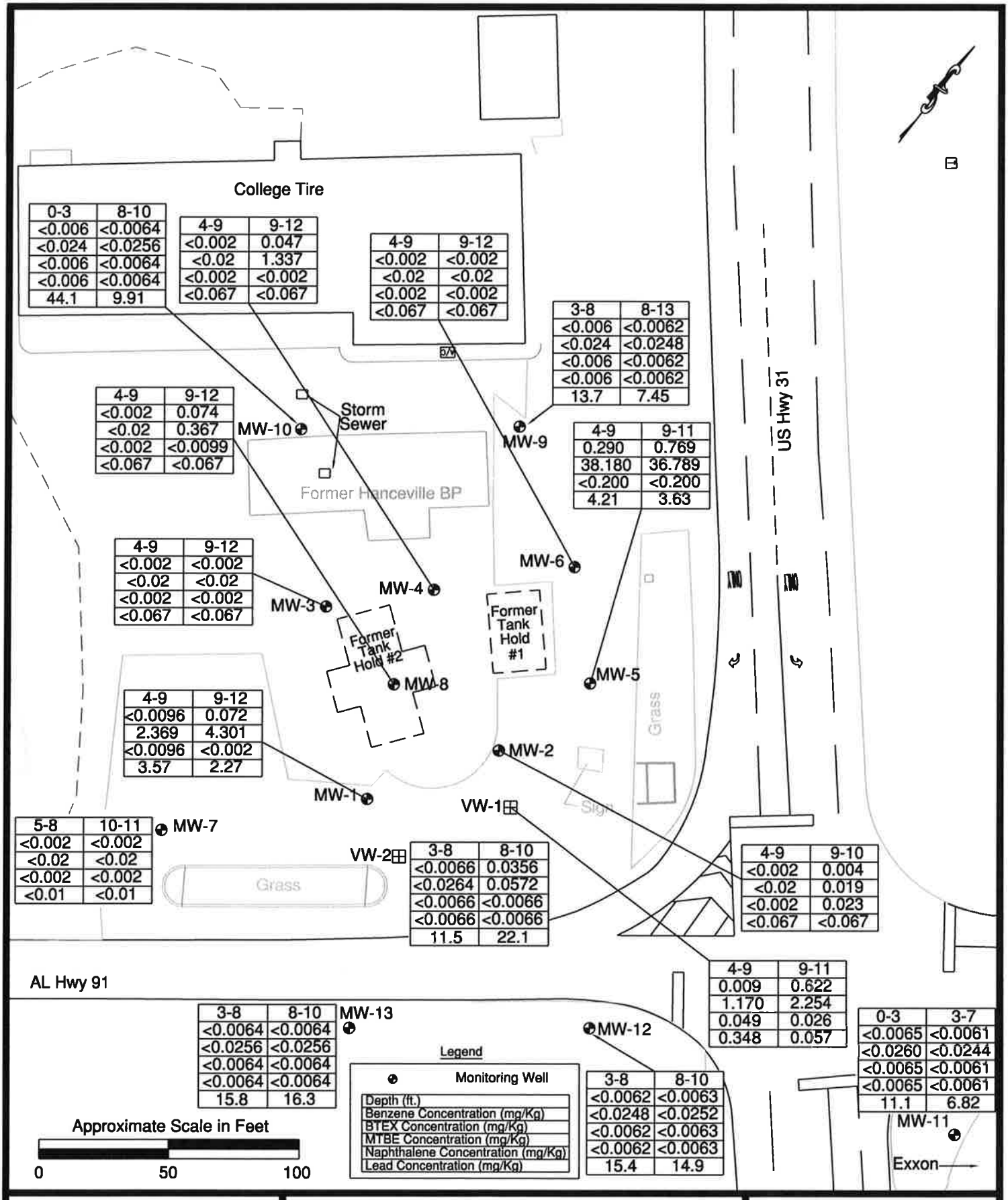

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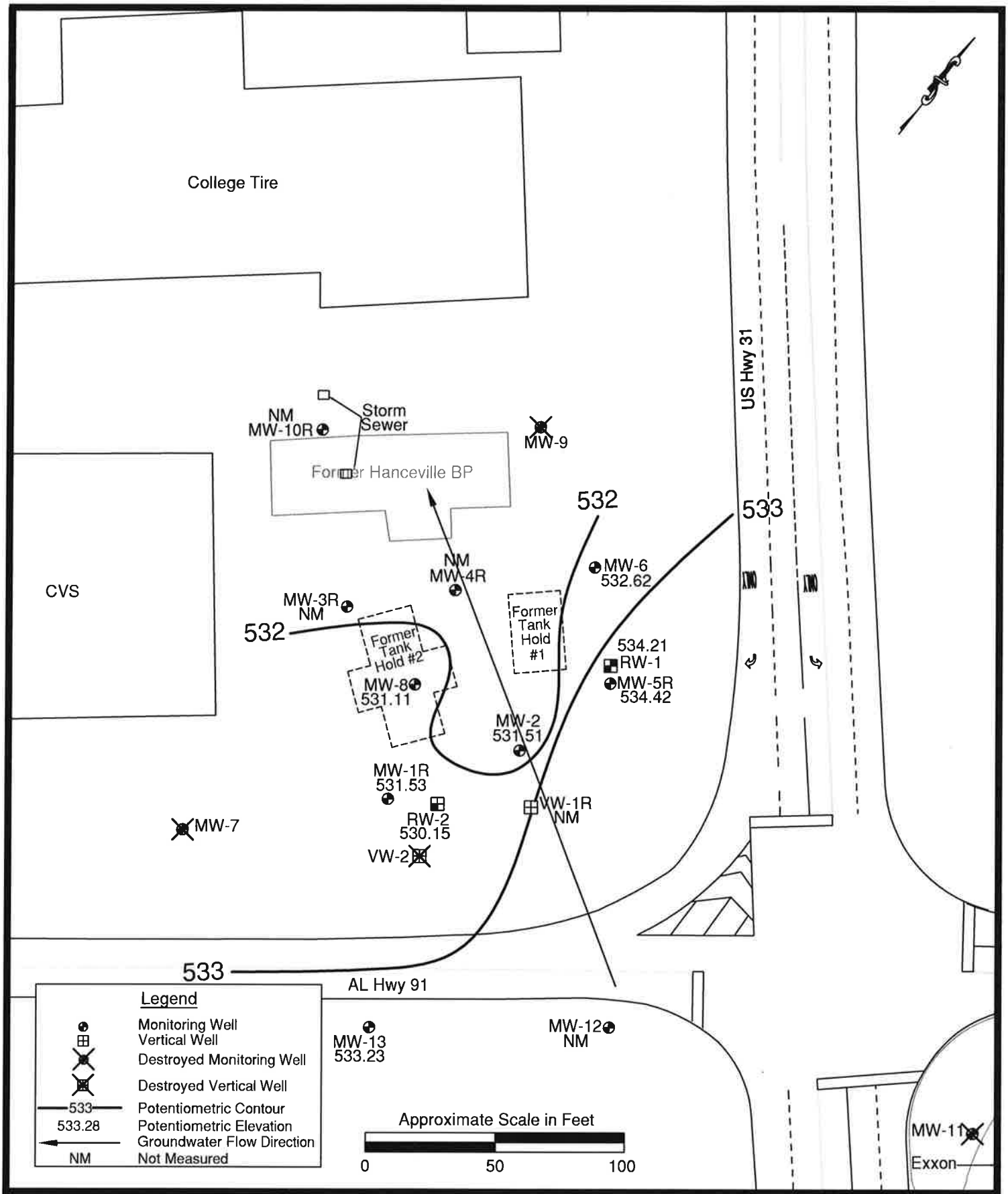
Figure 5
Soil Constituent Concentration Map



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ANDALUSIA, ALABAMA (334) 222-9431
AUBURN, ALABAMA (334) 466-9431
DOTHAN, ALABAMA (334) 677-9431
GADSDEN, ALABAMA (256) 543-9431
HUNTSVILLE, ALABAMA (256) 539-7470
BIRMINGHAM, ALABAMA (205) 403-2600
CDG
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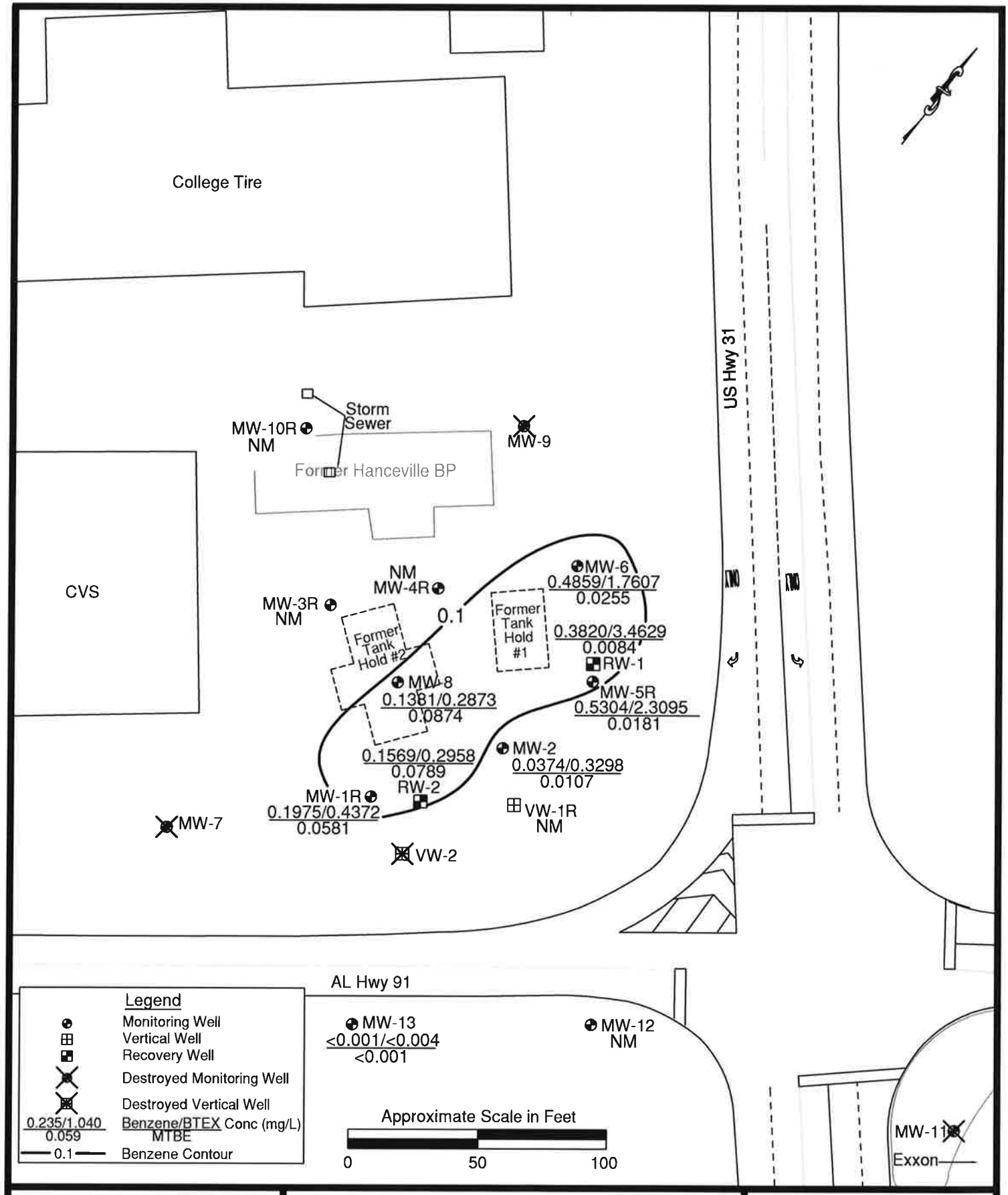
Figure 6
Potentiometric Surface
Contour Map
January 20, 2017

Drawing Prepared By: S. Booker



Former Hanceville BP
US Hwy 31 and AL Hwy 91
Hanceville, Cullman County, Alabama
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GADSDEN, ALABAMA (256) 543-9431
HUNTSVILLE, ALABAMA (256) 539-7470

Figure 7
Groundwater Concentration Map
with Benzene Contours
January 20, 2017

Drawing Prepared By: S. Booker

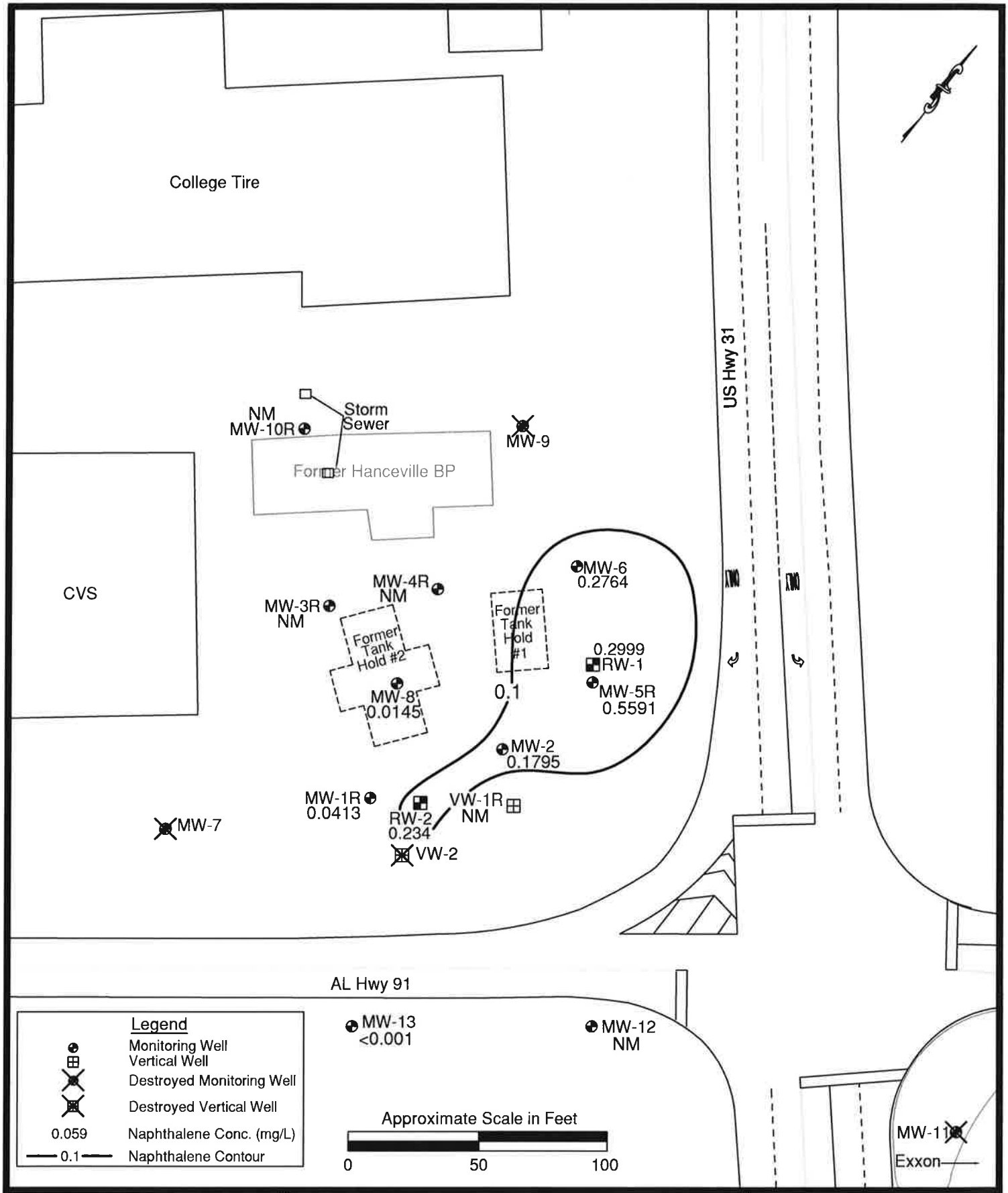

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Figure 8
Groundwater Naphthalene Map
January 20, 2017

Drawing Prepared By: S. Booker

Injection Well Detail

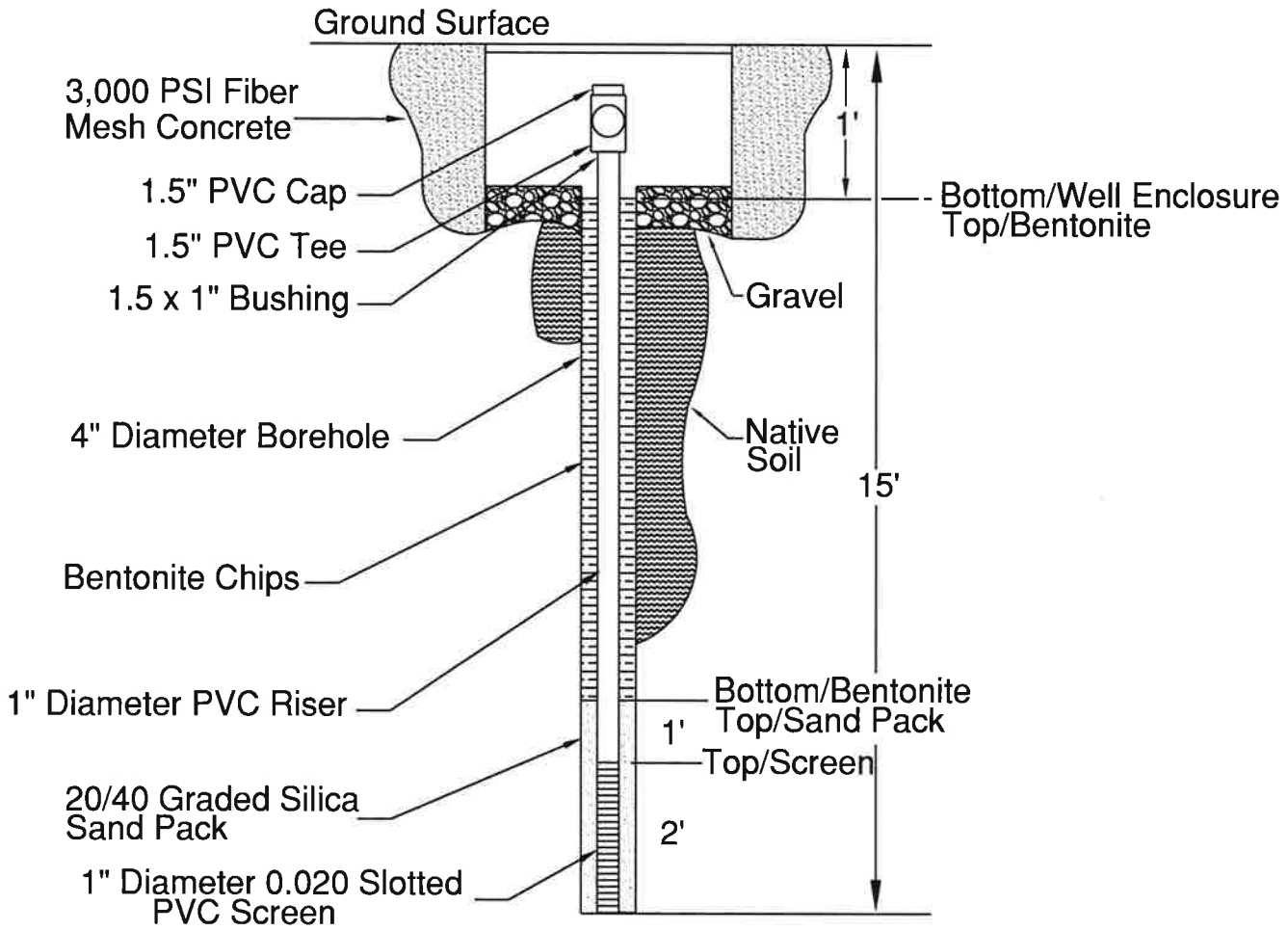

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Figure 9
Typical Air Sparge Injection Well Detail
Not to Scale

Prepared By: C. Elliott

CDG

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Approved ARBCA ACALs

Appendix A

ARBCA SUMMARY REPORT — FORM NO. 27

UST Incident No(s): UST10-02-01 | **Facility ID:** 11402-043-008179

Date Form Completed: 21-May-10 | **Form Completed By:** David C. Dailey

TIER 2 GROUNDWATER RESOURCE PROTECTION TARGET CONCENTRATIONS

Distance from source to the point of exposure (POE): *545 feet*

CHEMICALS OF CONCERN	COMPARISON FOR SOURCE SOIL			COMPARISON FOR SOURCE GROUNDWATER			COMPARISON FOR COMPLIANCE WELLS								
	Soil Source Rep. Conc.[1] [mg/kg]	Allowable Soil Conc.[2] [mg/kg]	E/NE	GW Source Rep. Conc.[3] [mg/L]	Allowable GW Conc. at a POC[4] [mg/L]	E/NE	CW Rep. Conc.[5] [mg/L]	Allowable GW Conc. at a POC[6] [mg/L]	E/NE	CW Rep. Conc.[5] [mg/L]	Allowable GW Conc. at a POC[6] [mg/L]	E/NE	CW Rep. Conc.[5] [mg/L]	Allowable GW Conc. at a POC[6] [mg/L]	E/NE
COMPLIANCE WELL NO.	*SB-5*			*MW-2*			*MW-1*			*MW-3*			*MW-4*		
DISTANCE FROM SOURCE	*18 feet*			*18 feet*			*21 feet*			*5 feet*			*5 feet*		
RECENT TREND	*sampled once*			*Sampled Once*			*Sampled Once*			*Sampled Once*			*Sampled Once*		
ORGANICS															
Benzene	0.5295	***0.0785***	E	31.7	0.208	E	0.2347	0.208	E	0.0005	0.208	NE	0.0719	0.208	NE
Toluene	7.27	*24.1*	NE	64.5	41.6	E	0.0646	41.5	NE	0.0005	41.6	NE	0.0571	41.6	NE
Ethylbenzene	3.995	*21.7*	NE	2.72	29.1	NE	0.3253	29.1	NE	0.0005	29.1	NE	0.1058	29.1	NE
Xylenes (Total)	25.69	*135*	NE	10.1	175	NE	0.4157	175	NE	0.0013	175	NE	0.4304	175	NE
MTBE	0.2	*0.202*	NE	547	0.832	E	0.0589	0.83	NE	0.0005	0.832	NE	0.0011	0.832	NE
Anthracene	0.226	*2.35*	NE				0.0006	0.0434	NE	0.00025	0.0434	NE	0.00025	0.0434	NE
Benzo(a)anthracene	0.03335	*7.74*	NE				0.00025	0.0094	NE	0.00025	0.0094	NE	0.00025	0.0094	NE
Benzo(a)pyrene	0.03335	*3.61*	NE				0.00025	0.00162	NE	0.00025	0.00162	NE	0.00025	0.00162	NE
Benzo(b)fluoranthene	0.03335	*4.24*	NE				0.00025	0.0015	NE	0.00025	0.0015	NE	0.00025	0.0015	NE
Benzo(g,h,i)perylene	0.03335	*2.54*	NE				0.00025	0.0007	NE	0.00025	0.0007	NE	0.00025	0.0007	NE
Benzo(k)fluoranthene	0.03335	*2.26*	NE				0.00025	0.0008	NE	0.00025	0.0008	NE	0.00025	0.0008	NE
Chrysene	0.03335	*1.46*	NE				0.00025	0.0016	NE	0.00025	0.0016	NE	0.00025	0.0016	NE
Fluoranthene	0.03335	*23.3*	NE				0.00025	0.206	NE	0.00025	0.206	NE	0.00025	0.206	NE
Fluorene	0.3755	*35.5*	NE				0.0027	1.98	NE	0.00025	1.98	NE	0.00025	1.98	NE
Naphthalene	3.92	*2.71*	E	0.126	0.832	NE	0.0528	0.83	NE	0.00025	0.832	NE	0.0014	0.832	NE
Phenanthrene	0.949	*32.6*	NE				0.0041	1	NE	0.00025	1	NE	0.00025	1	NE
Pyrene	0.0641	*21.1*	NE				0.00025	0.135	NE	0.00025	0.135	NE	0.00025	0.135	NE
METALS															
Arsenic															
Barium															
Cadmium															
Chromium VI															
Lead							0.099	0.623	NE	0.003	0.624	NE	0.034	0.624	NE
Zinc															

NOTE: Use the *ARBCA Computational Software* to calculate the allowable (i) soil source conc., (ii) GW source conc., and (iii) compliance well conc.

1: The soil source representative concentrations have to be calculated and entered here.

2: Allowable soil concentrations at the source protective of groundwater at the POE.

3: The groundwater source representative concentrations have to be calculated and entered here.

4: Allowable groundwater concentrations at the source protective of groundwater at the POE.

5: Representative concentrations in the compliance well.

6: Allowable groundwater concentrations at a point of compliance (POC) protective of a POE.

E: Representative concentration exceeds allowable concentration.

NE: Representative concentration does not exceed allowable concentration.

Recommended Attachment: A map showing the location(s) of the soil source(s), location of POE, and location(s) of POC.

ARBCA SUMMARY REPORT — FORM NO. 27

UST Incident No(s): UST10-02-01 | **Facility ID:** 11402-043-008179

Date Form Completed: 21-May-10 | **Form Completed By:** David C. Dailey

TIER 2 GROUNDWATER RESOURCE PROTECTION TARGET CONCENTRATIONS

Distance from source to the point of exposure (POE): *545 feet*

CHEMICALS OF CONCERN	COMPARISON FOR COMPLIANCE WELLS															
	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE	CW Rep. Conc [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE
COMPLIANCE WELL NO.	*MW-5*			*MW-6*			*MW-7*			*MW-8*			*MW-9*		
DISTANCE FROM SOURCE	*18 feet*			*17 feet*			*80 feet*			*0 feet*			*65 feet*		
RECENT TREND	*sampled once*			*sampled once*			*sampled once*			*sampled once*			*sampled once*		
ORGANICS															
Benzene	0.7332	0.208	E	0.7702	0.208	E	0.0005	0.119	NE	0.0544	0.208	NE	0.0005	0.142	NE
Toluene	0.8265	41.6	NE	1.0642	41.6	NE	0.0005	23.7	NE	0.0501	41.6	NE	0.0005	28.4	NE
Ethylbenzene	0.0868	29.1	NE	1.1012	29.1	NE	0.0005	16.6	NE	0.079	29.1	NE	0.0005	19.9	NE
Xylenes (Total)	1.012	175	NE	3.8399	175	NE	0.0005	175	NE	0.3039	175	NE	0.0005	175	NE
MTBE	0.3568	0.832	NE	0.0183	0.832	NE	0.0005	0.475	NE	0.0141	0.832	NE	0.0005	0.568	NE
Anthracene										0.00025	0.0434	NE			
Benzo(a)anthracene										0.00025	0.0094	NE			
Benzo(a)pyrene										0.00025	0.00162	NE			
Benzo(b)fluoranthene										0.00025	0.0015	NE			
Benzo(g,h,i)perylene										0.00025	0.0007	NE			
Benzo(k)fluoranthene										0.00025	0.0008	NE			
Chrysene										0.00025	0.0016	NE			
Fluoranthene										0.00025	0.206	NE			
Fluorene										0.00025	1.98	NE			
Naphthalene	0.0229	0.832	NE	0.2727	0.832	NE	0.0005	0.475	NE	0.0006	0.832	NE	0.0005	0.568	NE
Phenanthrene										0.00025	1	NE			
Pyrene										0.00025	0.135	NE			
METALS															
Arsenic															
Barium															
Cadmium															
Chromium VI															
Lead	0.16	0.624	NE	0.043	0.624	NE	0.282	0.356	NE	0.008	0.624	NE	0.047	0.426	NE
Zinc															

NOTE: Use the *ARBCA Computational Software* to calculate the allowable (i) soil source conc., (ii) GW source conc., and (iii) compliance well conc.

5: Representative concentrations in the compliance well.

6: Allowable groundwater concentrations at a point of compliance (POC) protective of a POE.

E: Representative concentration exceeds allowable concentration.

NE: Representative concentration does not exceed allowable concentration.

Recommended Attachment: A map showing the location(s) of the soil source(s), location of POE, and location(s) of POC.

ARBCA SUMMARY REPORT — FORM NO. 27

UST Incident No(s): UST10-02-01 | **Facility ID:** 11402-043-008179

Date Form Completed: 21-May-10 | **Form Completed By:** David C. Dailey

TIER 2 GROUNDWATER RESOURCE PROTECTION TARGET CONCENTRATIONS

Distance from source to the point of exposure (POE): *545 feet*

CHEMICALS OF CONCERN	COMPARISON FOR COMPLIANCE WELLS														
	CW Rep. Conc. 5 [mg/L]	Allowable GW Conc. at a POC 6 [mg/L]	E/ NE	CW Rep. Conc. 5 [mg/L]	Allowable GW Conc. at a POC 6 [mg/L]	E/ NE	CW Rep. Conc. 5 [mg/L]	Allowable GW Conc. at a POC 6 [mg/L]	E/ NE	CW Rep. Conc. 5 [mg/L]	Allowable GW Conc. at a POC 6 [mg/L]	E/ NE	CW Rep. Conc. 5 [mg/L]	Allowable GW Conc. at a POC 6 [mg/L]	E/ NE
COMPLIANCE WELL NO.	*MW-10*			*MW-11*			*MW-12*			*MW-13*			*VW-1*		
DISTANCE FROM SOURCE	*75 feet*			*240 feet*			*130 feet*			*110 feet*			*40 feet*		
RECENT TREND	*sampled once*			*sampled once*			*sampled once*			*sampled once*			*sampled once*		
ORGANICS															
Benzene	0.0005	0.126	NE	0.0005	0.0239	NE	0.0005	0.0659	NE	0.0005	0.0829	NE	0.0015	0.187	NE
Toluene	0.0005	25.2	NE	0.0005	4.77	NE	0.0005	13.2	NE	0.0005	16.6	NE	0.0035	37.4	NE
Ethylbenzene	0.0005	17.6	NE	0.0005	3.34	NE	0.0005	9.22	NE	0.0005	11.6	NE	0.0035	26.2	NE
Xylenes (Total)	0.0005	175	NE	0.0005	47.7	NE	0.0005	132	NE	0.0005	166	NE	0.0155	175	NE
MTBE	0.0005	0.504	NE	0.0017	0.0954	NE	0.007	0.263	NE	0.0005	0.331	NE	0.8438	0.748	E
Anthracene															
Benzo(a)anthracene															
Benzo(a)pyrene															
Benzo(b)fluoranthene															
Benzo(g,h,i)perylene															
Benzo(k)fluoranthene															
Chrysene															
Fluoranthene															
Fluorene															
Naphthalene	0.0005	0.504	NE	0.0005	0.0954	NE	0.0005	0.263	NE	0.0005	0.331	NE	0.0056	0.748	NE
Phenanthrene															
Pyrene															
METALS															
Arsenic															
Barium															
Cadmium															
Chromium VI															
Lead	0.036	0.378	NE	0.509	0.0716	E	0.018	0.198	NE	0.241	0.249	NE	0.032	0.561	NE
Zinc															

NOTE: Use the *ARBCA Computational Software* to calculate the allowable (i) soil source conc., (ii) GW source conc., and (iii) compliance well conc.

5: Representative concentrations in the compliance well.

6: Allowable groundwater concentrations at a point of compliance (POC) protective of a POE.

E: Representative concentration exceeds allowable concentration.

NE: Representative concentration does not exceed allowable concentration.

Recommended Attachment: A map showing the location(s) of the soil source(s), location of POE, and location(s) of POC.

ARBCA SUMMARY REPORT																		FORM NO. 27
UST Incident No(s):	**UST10-02-01**												**Facility ID:**	**11402-043-008179**				
Date Form Completed:	**21-May-10**												**Form Completed By:**	**David C. Dailey**				

TIER 2 GROUNDWATER RESOURCE PROTECTION TARGET CONCENTRATIONS

Distance from source to the point of exposure (POE): *545 feet*

	COMPARISON FOR COMPLIANCE WELLS															
CHEMICALS OF CONCERN	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE	CW Rep. Conc. [5] [mg/L]	Allowable GW Conc. at a POC [6] [mg/L]	E/ NE
COMPLIANCE WELL NO.	*VW-2*															
DISTANCE FROM SOURCE	*42 feet*															
RECENT TREND	*sampled once*															
ORGANICS																
Benzene	0.0005	0.183	NE													
Toluene	0.0005	36.7	NE													
Ethylbenzene	0.0005	25.7	NE													
Xylenes (Total)	0.0005	175	NE													
MTBE	0.0005	0.734	NE													
Anthracene																
Benzo(a)anthracene																
Benzo(a)pyrene																
Benzo(b)fluoranthene																
Benzo(g,h,i)perylene																
Benzo(k)fluoranthene																
Chrysene																
Fluoranthene																
Fluorene																
Naphthalene	0.0005	0.734	NE													
Phenanthrene																
Pyrene																
METALS																
Arsenic																
Barium																
Cadmium																
Chromium VI																
Lead	0.003	0.55	NE													
Zinc																

NOTE: Use the *ARBCA Computational Software* to calculate the allowable (i) soil source conc., (ii) GW source conc., and (iii) compliance well conc.

5: Representative concentrations in the compliance well.

6: Allowable groundwater concentrations at a point of compliance (POC) protective of a POE.

E: Representative concentration exceeds allowable concentration.

NE: Representative concentration does not exceed allowable concentration.

Recommended Attachment: A map showing the location(s) of the soil source(s), location of POE, and location(s) of POC.

ARBCA SUMMARY REPORT — FORM NO. 29a

UST Incident No(s): UST10-02-01 | **Facility ID:** 11402-043-008179

Date Form Completed: 21-May-10 | **Form Completed By:** David C. Dailey

TIER 2 ON-SITE TARGET LEVELS FOR INHALATION AND INGESTION

NOTE: The SSTLs listed for each route of exposure are the minimum SSTLs for all the receptors for that particular route of exposure. The Tier 2 on-site target levels are the minimum SSTLs of all routes of exposures within each medium.

CHEMICALS OF CONCERN	SURFICIAL SOIL		SUBSURFACE SOIL			GROUNDWATER			
	Outdoor Inhalation, Ingestion, & Dermal Contact [mg/kg]	On-Site Tier 2 Target Levels [mg/kg]	Indoor Inhalation [mg/kg]	Outdoor Inhalation [mg/kg]	On-Site Tier 2 Target Levels [mg/kg]	Indoor Inhalation [mg/L]	Outdoor Inhalation [mg/L]	Ingestion of Water [mg/L]	On-Site Tier 2 Target Levels [mg/L]
ORGANICS									
Benzene	39.1	**39.1**	27.3	489	**27.3**	89.1	1750	NA	**89.1**
Toluene	274	**274**	274	274	**274**	526	526	NA	**526**
Ethylbenzene	113	**113**	113	113	**113**	169	**169**	NA	**169**
Xylenes (Total)	135	**135**	135	135	**135**	175	175	NA	**175**
MtBE	377	**377**	10500	10500	**10500**	48000	48000	NA	**48000**
Anthracene	2.35	**2.35**	2.35	2.35	**2.35**	0.0434	0.0434	NA	**0.0434**
Benzo(a)anthracene	7.74	**7.74**	7.74	7.74	**7.74**	0.0094	0.0094	NA	**0.0094**
Benzo(a)pyrene	2.23	**2.23**	3.61	3.61	**3.61**	0.00162	0.00162	NA	**0.00162**
Benzo(b)fluoranthene	4.24	**4.24**	4.24	4.24	**4.24**	0.0015	0.0015	NA	**0.0015**
Benzo(g,h,i)perylene	2.54	**2.54**	2.54	2.54	**2.54**	0.0007	0.0007	NA	**0.0007**
Benzo(k)fluoranthene	2.26	**2.26**	2.26	2.26	**2.26**	0.0008	0.0008	NA	**0.0008**
Chrysene	1.46	**1.46**	1.46	1.46	**1.46**	0.0016	0.0016	NA	**0.0016**
Fluoranthene	23.3	**23.3**	23.3	23.3	**23.3**	0.206	0.206	NA	**0.206**
Fluorene	35.5	**35.5**	35.5	35.5	**35.5**	1.98	1.98	NA	**1.98**
Naphthalene	90.8	**90.8**	90.8	90.8	**90.8**	31	**31**	NA	**31**
Phenanthrene	32.6	**32.6**	32.6	32.6	**32.6**	1	1	NA	**1**
Pyrene	21.1	**21.1**	21.1	21.1	**21.1**	0.135	0.135	NA	**0.135**
METALS									
Arsenic	NA	**NA**	NA	NA	NA	NA	NA	NA	NA
Barium	NA	**NA**	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	**NA**	NA	NA	NA	NA	NA	NA	NA
Chromium VI	NA	**NA**	NA	NA	NA	NA	NA	NA	NA
Lead	400	**400**	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	**NA**	NA	NA	NA	NA	NA	NA	NA

NOTE:
NA: Not Available

ARBCA SUMMARY REPORT — FORM NO. 29b

UST Incident No(s): UST10-02-01 | **Facility ID:** 11402-043-008179

Date Form Completed: 21-May-10 | **Form Completed By:** David C. Dailey

TIER 2 OFF-SITE TARGET LEVELS FOR INHALATION AND INGESTION

NOTE: The SSTLs listed for each route of exposure are the minimum SSTLs for all the receptors for that particular route of exposure. The Tier 2 off-site target levels are the minimum SSTLs of all routes of exposures within each medium.

CHEMICALS OF CONCERN	SURFICIAL SOIL		SUBSURFACE SOIL			GROUNDWATER			
	Outdoor Inhalation, Ingestion, & Dermal Contact [mg/kg]	Off-Site Tier 2 Target Levels [mg/kg]	Indoor Inhalation [mg/kg]	Outdoor Inhalation [mg/kg]	Off-Site Tier 2 Target Levels [mg/kg]	Indoor Inhalation [mg/L]	Outdoor Inhalation [mg/L]	Ingestion of Water [mg/L]	Off-Site Tier 2 Target Levels [mg/L]
ORGANICS									
Benzene	NA	NA	27.3	489	**27.3**	89.1	1750	NA	**89.1**
Toluene	NA	NA	274	274	**274**	526	526	NA	**526**
Ethylbenzene	NA	NA	113	113	**113**	169	169	NA	**169**
Xylenes (Total)	NA	NA	135	135	**135**	175	175	NA	**175**
MtBE	NA	NA	10500	10500	**10500**	48000	48000	NA	**48000**
Anthracene	NA	NA	2.35	2.35	**2.35**	0.0434	0.0434	NA	**0.0434**
Benzo(a)anthracene	NA	NA	7.74	7.74	**7.74**	0.0094	0.0094	NA	**0.0094**
Benzo(a)pyrene	NA	NA	3.61	3.61	**3.61**	0.00162	0.00162	NA	**0.00162**
Benzo(b)fluoranthene	NA	NA	4.24	4.24	**4.24**	0.0015	0.0015	NA	**0.0015**
Benzo(g,h,i)perylene	NA	NA	2.54	2.54	**2.54**	0.0007	0.0007	NA	**0.0007**
Benzo(k)fluoranthene	NA	NA	2.26	2.26	**2.26**	0.0008	0.0008	NA	**0.0008**
Chrysene	NA	NA	1.46	1.46	**1.46**	0.0016	0.0016	NA	**0.0016**
Fluoranthene	NA	NA	23.3	23.3	**23.3**	0.206	0.206	NA	**0.206**
Fluorene	NA	NA	35.5	35.5	**35.5**	1.98	1.98	NA	**1.98**
Naphthalene	NA	NA	90.8	90.8	**90.8**	31	31	NA	**31**
Phenanthrene	NA	NA	32.6	32.6	**32.6**	1	1	NA	**1**
Pyrene	NA	NA	21.1	21.1	**21.1**	0.135	0.135	NA	**0.135**
METALS									
Arsenic	NA	NA	NA	NA	**NA**	NA	NA	NA	**NA**
Barium	NA	NA	NA	NA	**NA**	NA	NA	NA	**NA**
Cadmium	NA	NA	NA	NA	**NA**	NA	NA	NA	**NA**
Chromium VI	NA	NA	NA	NA	**NA**	NA	NA	NA	**NA**
Lead	NA	NA	NA	NA	**NA**	NA	NA	NA	**NA**
Zinc	NA	NA	NA	NA	**NA**	NA	NA	NA	**NA**

NOTE:
NA: Not Available

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Quality Assurance/Quality Control Plan

Appendix B

QA/QC MONITORING/SAMPLING PLAN

FIELD ACTIVITIES

Air Sampling

Air samples are collected utilizing an air sampling pump system or Summa canister. The pump is primed, prior to collection of each sample, to displace any trapped air or gases with the targeted air make-up. The air is drawn in and exits through polyethylene tubing. The sample is collected directly into and stored in a Tedlar air/gas sampling bag or Summa canister. The sample bag or canister is provided to CDG by the analytical laboratory. The air sampling pump system is also used to extract air/gases from a vacuum and drive them into a field-screening instrument. The air sample collection and screening protocols are described below.

Air Screening

Air screening is conducted to provide a field indication of the levels of hydrocarbon gases in vapor phase. The air/gases are screened with an organic vapor analyzer, equipped with a methane filter (as applicable). The field instrument is field calibrated to a gas standard of known concentration. Field air/gas samples are screened at ambient conditions and the data recorded. The field screening test form contains the following information:

- Project name (client and location);
- Data table number;
- Personnel collecting samples;
- Field screening instrument used and I.D. number;
- Calibration information;
- Description of field screening method;
- Sample identification information; and
- Screening data, including time collected/screened, ambient temperature/results.

Air Sampling Protocols

Air samples designated for laboratory analysis are collected in Tedlar bags or a Summa canister. The sample bags or canister are provided to CDG directly by the analytical laboratory. If Tedlar bags are used, two Tedlar bags are filled for each sample, in the event the bags are damaged during shipment. Upon collection, each sample bag is immediately placed in a cooler or other secure shipping container, following laboratory instructions and appropriate chain of custody documentation. The samples are sent direct to the laboratory via overnight carrier, or are picked up from the CDG office by a representative of the laboratory.

Groundwater Monitoring/Sampling Activity Protocols

Groundwater monitoring/sampling includes the following associated activities:

1) Measurement for the presence of free product;
2) Measurement of static water level;
3) Calculation of standing water volume (in well);

4) Sample collection; and
5) Equipment decontamination.

Groundwater sampling parameters are recorded in the field on a monitor well sampling record form. The details for each of the above referenced monitoring/sampling activities are described in the following sections.

Free Product Detection and Measurement

The presence of free product is measured prior to free product recovery, and purging/sampling the selected monitor well. Free product is detected/measured using a hydrocarbon/water interface probe. The probe is lowered slowly into the well until an instrument tone is heard (a constant tone indicates that free product is present, and an intermittent tone indicates that water is present). The point at which a constant tone is first heard is considered the top of free product. The measurement from the top of the PVC well casing to the top of free product is recorded. The measurement is checked at least twice. The probe is then slowly lowered further into the well until an intermittent tone is heard (indicating that the probe has passed through the free product layer into the underlying groundwater interval). Once the intermittent tone is encountered, the probe is slowly raised until the constant tone is again indicated. This point is considered the interface between the floating free product layer and the groundwater table. The measurement from the top of the PVC casing to the interface is recorded. This measurement is also checked at least twice.

The free product thickness is determined by calculating the difference between the measurement to the top of free product and the measurement to the free product/water interface (the interface probe measures free product and water levels to an accuracy of 0.01 feet). If free product is identified by the interface probe, a clear bailer is lowered into the well to collect a sample for visual confirmation of the free product. Remarks regarding visual characteristics of the free product are recorded (black, clear, colored, etc.).

Calculation of Standing Water Volume

The standing water volume in a monitor well is calculated using the equation:

$\mathbf{v = 3.14 \times r^2 \times l}$ (where **v** = well volume, **r** = well radius, and **l** = length of the column of water in the well).

The column of water in the well can be calculated using the equation:

$\mathbf{l = w - d}$ (where **w** = distance from the top of casing to the bottom of the well and **d** = distance from the top of casing to the top of the water).

Well Evacuation

Well evacuation is initiated after the static water level is measured and the standing water volume has been calculated. Well evacuation is conducted by either using a new disposable (single-use) bailer, a well-dedicated PVC bailer, or a surface mounted pneumatic operated diaphragm pump (a diaphragm pump is only used in deep wells

(greater than 25 feet) or in wells that yield such large volumes that hand-bailing is not practical).

Well evacuation with a bailer is performed by attaching a new nylon line to the bailer, and then lowering the bailer in to the well until the bailer is submerged. The bailer is then retrieved from the well in such a manner that the bailer and nylon line do not contact the ground or surrounding vegetation (to prevent contaminating the bailer or line). The water removed from the well is poured into a graduated bucket so that the amount of water removed can be determined. This procedure is repeated until three well volumes of water are removed, or until the well is purged dry. For wells that recharge very slowly, the purge water is limited to one well volume. The volume of groundwater purged from each well will be recorded.

Well evacuation with a diaphragm pump is conducted by lowering disposable tubing (hose) into the well, to sufficient depth. For deeper wells, a PVC pipe, equipped with a foot valve (to stage-lift the water out of the well) will be employed. The piping will be well-dedicated to prevent cross-contamination. Pumping will be performed until at least three well volumes are recovered (purge volume will be recorded).

Petroleum contaminated water (PCW) purged from wells in conjunction with groundwater monitoring/sampling activities will be containerized on-site in labeled 55-gallon drums. PCW will be removed periodically from the site to an appropriate disposal/treatment/recycling facility approved by the ADEM. Records will be maintained as to the volume of PCW accumulated at the site, and identification labels will be affixed to PCW containers. Prior to disposal, samples will be collected and analyzed as required by the ADEM and the disposal/treatment/recycling facility. No waste will be removed from the site without ADEM knowledge/approval.

Groundwater Sample Collection

Groundwater samples are collected from monitor wells not containing free product, unless otherwise directed by the ADEM. Groundwater sampling is performed using a new disposable bailer for each sampled well. The disposable bailers are purchased in individually wrapped packages, and are not opened until ready to use. Once opened, the bailers are attached to a length of new nylon string. The bailer and string are not allowed to touch the ground or vegetation, and are disposed of after each well. Sampling is accomplished by slowly lowering the bailer into the well to a depth where the bailer is almost completely submerged. The bailer is then slowly retrieved from the well to minimize agitation of the sample. Once collected, the water sample is immediately transferred (poured slowly to minimize agitation and formation of air bubbles) into the designated sample containers.

Groundwater samples collected for BTEX/MTBE analysis (volatile organics) are poured very slowly down the inside of the sample vial to avoid aeration. The sample vials, consisting of 40 ml glass with a Teflon septum cap, are shipped to CDG directly from the analytical laboratory. The groundwater sample is added to the vial until a convex

meniscus is formed across the top of the vial. The Teflon septum cap is placed on the vial and the vial is upended to check for trapped air bubbles. If bubbles are present, the sample container is opened, and topped off again until an air-free sample is obtained. If the vial cannot be closed "air-free" after three tries, it is discarded. Two samples are collected for each BTEX/MTBE (volatile) analysis. The preservation employed for BTEX/MTBE (volatile) analysis will include either of the following (depending on holding time constraints):

- Cool collected sample to 4°C and maintain (7 day holding time), or
- Add 4 drops concentrated HCl to sample vial (typically the acid is pre-added by the laboratory to the sample vial) and then cool sample to 4°C and maintain (14 day holding time).

Immediately following collection of each groundwater sample, the sample is labeled, placed in bubble pack (to prevent the glass vial from breaking during shipping), and stored in a well-iced ice chest. Each sample label includes the site location, sample identification number, name of collector, date/time of collection, and parameter(s) requested.

Following collection of all samples, the iced chest will be sealed and transported to the laboratory following appropriate chain of custody protocols (refer to description of Chain of Custody protocols provided below).

Decontamination of Groundwater Sampling Equipment
All equipment used for groundwater sampling is either well-dedicated or is used only once and disposed of. As a result, cleaning/decontamination of sampling equipment is minimal.

QA/QC PROCEDURES DISCUSSION

Chain of Custody
Sample custody begins with the subcontracted laboratory when sample kits are prepared and shipped for CDG use at a specified project location. Responsibility for sample container materials and preparation lies with the subcontracted laboratory. Sample containers and kits are normally shipped to CDG by common carrier or are dropped off by a laboratory representative. Upon receipt of the kits, CDG personnel complete an inventory of the contents to confirm that the containers, etc. are adequate for the number of wells and specified analytes. Sample bottles may be pre-labeled and contain the proper preservative. The individual sample vials and/or other sample containers are not opened until used in the field. CDG will secure the sample kits inside the office until the specific sampling project is to be performed.

The samples remain in the custody of the CDG representative until delivered to the subcontract laboratory or dispatched via common carrier for shipment to the laboratory. In cases where samples leave the direct control of CDG personnel, such as shipment to a

laboratory by a common carrier (FedEx, UPS, etc.), a seal will be provided on the shipping container or individual sample bottles to ensure that the samples have not been opened or otherwise disturbed during transportation.

To establish and maintain the documentation necessary to trace sample possession from the time of collection, a chain of custody record will be completed and will accompany every sample. The record contains the following types of information:

- Sample number
- Signature of collector
- Date and time of collection
- Sample type (soil, groundwater, air, etc.)
- Identification of well
- Number of containers
- Parameters requested for analysis
- Required detection limit
- Signature of person(s) involved in the chain of possession.

Field QA/QC Program

Various types of field blanks are collected to verify that the sample collection and handling process has not affected the quality or integrity of the samples.

1) Trip Blanks – A trip blank is a field blank that is transported from the laboratory to the sampling site, handled in the same manner as other samples, and then returned to the laboratory for analysis in determining QA/QC of sample handling procedures. The trip blank is prepared in the laboratory with distilled/organic free water and is utilized at a frequency of 1 trip blank for each cooler (or other shipping container) used to transport samples from the laboratory to the field and back to the laboratory.

2) Duplicate Sample – Duplicate samples are collected simultaneously from the same source, under identical conditions, into separate sample containers. These samples provide a check on the sampling techniques as well as laboratory equipment. Duplicate samples are only collected on groundwater samples at a frequency of one sample per sampling event.

The results of the analysis of the blanks will not be used to correct the groundwater data. If contaminants are found in the blanks, an attempt to identify the source of contamination will be initiated and corrective action, including re-sampling if necessary, will be evaluated.

After completing a sampling program, the field data package (field logs, calibration records, chain of custody forms, etc.) will be reviewed for completeness and accuracy. Some of the items considered in the Field Data Package Validation Procedure include but are not limited to the following:

- A completeness review of field data contained on water and soil sampling logs;
- A verification that sampler blanks were properly prepared, identified, and analyzed;
- A check on field analyses for equipment calibration and condition; and
- A review of chain of custody forms for proper completion, signatures of field personnel and the laboratory sample custodian, and dates.

Laboratory QA/QC Program

The selection of a contract laboratory can be directed either by the client or by CDG. In either case, the selection is typically based upon several facts, including cost; laboratory certification; quality data and reporting; and turn around time. The most critical factor in the selection of an analytical laboratory by CDG is the quality of data and reporting provided by the laboratory. Typically, the results of analytical laboratory testing dictate the activities conducted at a site. The activities conducted when selecting a laboratory include discussions with current and past customers, discussions with regulators, and review of laboratory QA/QC practices.

The normal turn around for samples will be two weeks for most samples. Prior to contracting a laboratory to conduct analysis, an estimate of the turn around time is obtained. If the expected turn around is in excess of three weeks then a backup laboratory is contacted to determine their availability. A decision of which laboratory to use in a particular instance is made on a case-by-case basis.

Once an analytical report is received by CDG, validation of the analytical data package will be performed. The Analytical Data Package Validation procedure will include but is not limited to the following:

- A comparison of the Data Package to the reporting level requirements designed for the project, to ensure completeness;
- A comparison of sampling dates, sample extraction dates, and analysis dates to determine if samples were extracted and/or analyzed within the proper holding times' as failure in this area may render the data unusable;
- A review of analytical methods and required detection limits to verify that they agree with set standards; as failure in this area may render the data unusable;
- A review of sample blanks to evaluate possible sources of contamination. The preparation techniques and frequencies, and the analytical results (if appropriate) will be considered; and
- A review of blanks (trip blanks, reagent blanks, method blanks, and extraction blanks) to assure that they are contamination free at the lowest possible detection limit. All blank contaminants must be explained or the data applicable to those blanks will be labeled suspect and may only be sufficient for qualitative purposes.
- A review of detection limits, to ensure sample results are accurate to below the levels specified as ADEM Initial Screening Levels.
- A review of data "qualifiers" reported by the laboratory for significance to the results.

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Site Health and Safety Plan

Appendix C

Site Health and Safety Plan

Former Hanceville BP
Hanceville, Cullman County, Alabama
ADEM Facility ID# 11402-043-008179
ADEM Incident No. UST10-02-01

Prepared For:

Dean Oil Company
340 County Road 1635
Cullman, Alabama 35058

Prepared By:

CDG Engineers & Associates, Inc.
3 Riverchase Ridge
Birmingham, Alabama 35244

Table of Contents

1.0 Introduction

This Health and Safety Plan (HASP) has been prepared specifically for corrective action activities to be conducted by CDG Engineers & Associates, Inc. (CDG) for the former Hanceville BP facility in Hanceville, Cullman County, Alabama. These activities include all fieldwork necessary to conduct soil and groundwater remediation of petroleum hydrocarbons at the site.

2.0 Purpose

This HASP describes the preventative measures, person protection, and safety procedures to be followed by CDG personnel and subcontractors during all field activities. The HASP has been prepared in accordance with and meets the requirements of the Occupation Safety and Health Administration (OSHA) General Safety Standards for industry under 29 CFR 1910 and construction under 29 CFR 1926, the joint NIOSH/OSHA/USCG/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, dated October 1985, and NFPA Safety Guidelines. Should any unexpected conditions arise, the HASP will be amended to accommodate site specific conditions.

3.0 Key Personnel and Responsibilities

All CDG personnel have received an initial 40-hour HAZWOPER certification, which is updated annually through an 8-hour refresher course. This training course meets the requirements of the OSHA 29 CFR 1910.120 standards. CDG personnel assigned to the project include:

NAME	TITLE	RESPONSIBILITIES
David Dailey	Professional Engineer/ Corporate HSO	Overall management of entire project from beginning to completion. Responsible for preparation and implementation of the HASP and reporting of all hazard incidents to appropriate enforcement agencies. Coordinates and oversees all field activities.
Ann Dyer	Environmental Scientist/ Site HSO/Project Manager	Performs all field activities and is responsible for recognizing site hazards and reporting hazard incidents to Corporate HSO.

4.0 Scope of Work

Work to be performed will include installation and excavation activities.

4.1 *Installation Activities*

Installation activities generally involve preparing the site for installation activities and also the construction of the MPVE unit onsite. More specifically this will include:

- Preparing the site for work to be performed
- Saw-cutting concrete surface, excavating, and installing well vaults
- Installing polyvinyl chloride (PVC) extraction piping and subsurface utility lines
- Installing piping connections from extraction piping to wellhead
- Overseeing placing and leveling of remediation system
- Completing all piping connections from extraction and utility lines to remediation unit
- Completing all electrical connections
- Installing concrete block security fence
- Inspecting rotation on all electric motors
- Inspecting PVC piping, extraction lines, treatment system, and associated connections for leaks at start up

4.2 *Operation and Maintenance Activities*

Subsequent to the construction and installation of the MPVE unit, the unit must periodically undergo inspections or maintenance. CDG field personnel will inspect the unit on a weekly basis, taking certain instrument readings necessary to determine the progress of the remediation being performed at that particular site. Maintenance of the unit is performed on an as needed basis. The following applies to operation and maintenance activities associated with the MPVE unit:

- Inspecting proper working condition of telemetry system
- Lubricating motors
- Inspecting piping for leaks
- Inspecting belts on Liquid Ring Vacuum Pump (LRVP) system
- Periodic cleaning of equipment and components
- Periodic inspections of electrical connections
- Measuring induced vacuum in on site monitoring wells
- Removing silt and sludge buildup from knockout pot air stripper, filtration system and other system components
- Measuring air flow from MPVE unit
- Measuring liquid levels in wells
- Sampling effluent for discharge parameters
- Measuring volume of liquids removed and discharged

5.0 Chemical Hazards

When conducting the aforementioned corrective action activities, the primary chemicals of concern are gasoline.

5.1 Gasoline and Diesel

Gasoline and diesel are substances to be potentially encountered in the soil and groundwater at the site. Gasoline components include benzene, toluene, ethylbenzene, and xylenes (BTEX). Diesel components may include anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.

5.2 Hazard Identification

During the corrective action activities, many hazards or potential hazards may be encountered when dealing with gasoline or diesel. This section serves as a guideline in recognizing hazards associated with these chemicals that exist or may potentially arise during field activities. Recognition is the first step in eliminating exposure to these hazards.

Occasionally methyl-tertiary butyl ether (MTBE) is encountered. MTBE has been used since 1979 as an oxygenate to gasoline in order to decrease carbon monoxide production in cars, particularly older model cars; however, MTBE has been determined to be a potential carcinogen. MTBE has low taste and odor thresholds, which can make a water supply non-potable even at low concentrations.

Exposure to MTBE will only be seen through exposure to gasoline containing MTBE and the effects of gasoline containing MTBE are relatively similar to gasoline not containing MTBE. The following are hazards associated with exposure to gasoline:

- Contact may irritate or burn the skin and eyes and absorption through the skin may be poisonous
- Vapors may be poisonous if inhaled and are irritating to the respiratory tract
- Vapors are an explosion hazard and my travel to a source of ignition and produce flashback
- A gasoline fire may produce irritating and poisonous gases
- Gasoline and diesel are flammable/combustible materials that may be ignited by heat, sparks, or flames, and a gasoline container may explode when exposed to heat or fire

The primary hazard associated with exposure to gasoline is the inhalation of vapors. The Material Safety Data Sheets (MSDS's) are presented in Attachment A.

5.3 Hazard Prevention

Preventing exposure to chemical hazards generally requires the use of personal protective equipment (PPE). Level D equipment will provide the protection necessary to prevent exposure to these hazards. Level D equipment is discussed further in Section 10.1, Personal Protective Equipment.

5.4 *Symptoms and First Aid Procedures*

Many of the constituents found in gasoline and diesel act as central nervous system (CNS) depressants. The following table includes first aid measures for CNS depressants, which affect a person through inhalation (breathing), dermal (skin), or ingestion (mouth) exposure. In addition, the eye can be very sensitive to exposure to chemicals and is therefore included in the following table:

ROUTES OF EXPOSURE	SYMPTOMS	TREATMENT
Inhalation	Dizziness, nausea, lack of coordination, headache, irregular and rapid breathing, weakness, loss of consciousness, coma	Bring victim to fresh air. Rinse eyes or throat with plenty of water, if irritated. If symptoms are severe (victim vomits, is very dizzy or groggy, etc.), evacuate to hospital. Be prepared to administer CPR if certified. Monitor victim for at least 48 hours.
Dermal	Irritation, rash, or burning	Flush affected area with water for at least 15 minutes. Apply clean dressing and get medical attention.
Ingestion	Dizziness, nausea with stomach, cramps, loss of consciousness, coma	Evacuate victim to hospital. Do not induce vomiting.
Eye	Redness, irritation, pain, impaired vision	Flush with an abundant amount of water for at least 15 minutes. If severe, seek medical attention immediately.

6.0 *Equipment/Operational Hazards*

The following sections will address the hazards, preventative measures, and first aid procedures associated with the drill rig, backhoes, and other heavy equipment. The drill rig used during these field activities generally requires the use of augers for probing. These augers are designed to rotate in a circular motion while being forced downward through the soil. Field personnel are required to assemble and disassemble these parts. Contact with these rotating parts is one recognized hazard. In addition, the machinery also contains parts that become increasingly heated during operation.

6.1 *Hazard Identification*

There are several hazardous associated with use of any type of drill rig and heavy machinery while performing corrective action activities. Generally during these field operations, the general public may become fascinated with the operation and approach the work area. All unauthorized personnel are required to remain 100 feet away from the work area. The site HSO officer will be responsible for keeping all unauthorized personnel away from the work area. The hazardous associated with the use of a drill rig or other heavy machinery is as follows:

- Gasoline vapors from nearby dispensers can potentially enter the diesel-operated engine thereby causing fire/explosion hazards
- Rotating augers may catch onto gloves or clothing thereby pulling hands arms into the rotating machinery
- Drilling equipment may rupture hydraulic hoses thereby releasing hydraulic fluids
- Engine and exhaust system of an engine are extremely hot during and following operation
- Potential contact with overhead and underground utilities
- Open excavations/boreholes can be the source of trips and falls
- Digging machinery such as backhoes may puncture subsurface utilities
- Operators of heavy machinery may be unable to locate pedestrians near the operating equipment; therefore, all field personnel are to remain with eye contact of the operator at all times during operation

6.2 Hazard Prevention

Hazards associated with heavy machinery can easily be avoided with additional planning. The key to avoiding these hazards includes being familiar with the equipment and the process. In addition, being familiar with and implementing the precautionary measures listed below may reduce or eliminate the risks of a hazardous situation.

- Wear hard hat when working near or around the machinery
- Wear safety glasses when performing maintenance to machinery or power tools
- Shut down the machine engine when repairing or adjusting equipment
- Prevent accidental starting of engine during maintenance procedures by removing or tagging ignition key
- Block wheels or lower leveling jacks and set hand brakes to prevent equipment form moving during drilling procedures
- When possible, release all pressure on hydraulic systems, drilling fluid systems, , and air pressure systems of heavy machinery prior to performing maintenance
- Know the location of the emergency shut-off switch for all equipment
- Avoid contact with engine or exhaust system of engine following its operation
- Avoid using gasoline or other volatile/flammable liquids as a cleaning agent on or around heavy machinery
- Replace all caps, filler plugs, protective guards or panels, and high-pressure hose clamps, chains or cables moved during maintenance prior to excavation
- Avoid wearing rings or jewelry during drilling or installation procedures
- Be aware of all overhead and underground utilities
- Avoid alcohol or other CNS depressants or stimulants prior to excavation
- Avoid contact with equipment parts during freezing weather. Freezing of moist skin to metal can occur almost instantaneously
- Shut all field operations during an electrical storm
- Do not operate heavy equipment within 20 feet of overhead power lines

6.3 Symptoms and First Aid Procedure

Hazards associated with heavy equipment were identified in Section 6.1. Unlike hazards associated with temperature or chemicals, symptoms will not be apparent with these types of hazards. In addition, these hazards will occur rapidly as opposed to over a period of time. Due to the size and composition of hydraulic vehicles, exposure to these hazards will range from extremely serious to life-threatening; therefore CDG requires that exposed field personnel seek medical attention at the nearest medical facility and the Project Manager be notified immediately. A site location map to the nearest hospital is presented in Attachment B.

7.0 Temperature Hazards

Another hazard associated with corrective action activities involves working in extreme weather conditions. Temperatures in the Southeast USA during the spring, summer, and occasionally the fall seasons can vary from mild to extremely hot. During this season, extra precautions are necessary to prevent hazards associated with elevated temperatures, which result in various forms of heat stress. In addition, the Southeast is known for its rather mild winter condition; however, on occasion, the Southeast may experience freezing conditions; therefore, precautions are also necessary to prevent hazards associated with these extreme temperatures.

7.1 Heat

As stated in OSHA's regulatory guidelines for heat exposure operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress. Additional factors to consider in the determination of heat stress on an individual include age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions such as hypertension (high blood pressure). The following sections will identify the hazards associated with heat stress, the measures needed in order to prevent exposure to these hazards, and first aid procedures in the event exposure to these hazards should occur.

7.1.1 Hazard Identification

Heat stress is a major hazard, especially for workers wearing protective clothing. Depending on the ambient conditions and the work being performed, heat stress can occur very rapidly- within as little as 15 minutes. The key to preventing excessive heat stress is educating personnel on the hazards associated with working in heat and the benefits of implementing proper controls and work practices. The hazards associated with heat stress range from heat fatigue (mild discomfort) to heat stroke (extreme danger, which may result in death, and are discussed in the following sections.

7.1.1.1 Heat Fatigue

Heat fatigue occurs due to a lack of acclimatization (adjusting one's tolerance to work in elevated temperatures). Acclimatization is a gradual process. This process should include all field personnel being permitted to work in

elevated temperatures in specified increments. On a daily basis, the maximum allowable work period should gradually be increased until the worker is able to perform his/her duties more proficiently under these conditions. The use of an acclimatization program is recommended in the regulatory guidelines established by OHSA.

7.1.1.2 Heat Rash

Heat rash (prickly heat) is the most common heat stress factor, and may result form continuous exposure to heat or humid air where the skin remains wet due to lack of evaporation. Under these conditions, sweat ducts become plugged, and a skin rash appears, generally in areas where clothing is restrictive. This uncomfortable rash can be prevented by resting in a cool place during breaks and by implementing good daily personal hygiene.

7.1.1.3 Heat Collapse

Heat collapse is commonly referred to as "fainting." Fainting generally occurs when the brain does not receive enough oxygen. As a result of this condition, the exposed individual may lose consciousness. Heat collapse is rapid and unpredictable; therefore, acclimatization is an important factor in preventing this condition.

7.1.1.4 Heat Cramps

Heat cramps are muscular spasms, which usually occur in the abdomen or limbs due to loss of electrolytes following profuse sweating. Cramps are caused by either too much or too little salt intake. During the sweating process, salt exits the body; therefore, without the proper replenishment, the body experiences an electrolyte imbalance thereby inducing heat cramps. Thirst cannot be relied upon as a guide to the need for water. When working in hot environments, water must be replenished every 15 to 20 minutes.

7.1.1.5 Heat Exhaustion

Heat exhaustion is a result of overexertion in hot or warm weather. It is highly possible for an onsite worker to experience heat exhaustion due to the use of worker-protective coveralls, boots, gloves, and respirator protection, even when ambient temperatures are mild. Fainting may also occur with heat exhaustion. This can become an extreme hazard if operating heavy machinery.

Caution: Individuals with heart problems or on a "low sodium" diet who work in these environments should consult a physician and Corporate HSO prior to working in these conditions.

7.1.1.6 Heat Stroke

Heat stroke is the most severe form of heat stress. The body's temperature control system is maintained through sweat production. Perspiration is a cooling process for the body and keeps the body core temperature within a stable range. During heat stroke, sweat production is inhibited and the body temperature begins to rapidly rise. Brain damage and death may occur if body core temperature is extremely elevated and is not reduced.

7.1.2 Hazard Prevention

Hazards associated with temperature extremes can also be prevented with additional planning and preparation. The hazards associated with temperature can range from heat fatigue to heat stroke as described previously in Section 7.1.1 Measures to ensure the prevention of temperature hazards are as follows:

- Adhere to acclimatization process by exposing field personnel to progressively longer periods of time in hot environments.
- Schedule work for early morning or evening during warm weather
- Work in shifts; limit exposure time of personnel and allow frequent breaks
- Have cool liquids at an Exclusion Zone border for exposed personnel to continuously replace body fluids. As stated in the previous section, OSHA recommends that fluids, preferably water and/or a water-electrolyte solution be replenished every 15 to 20 minutes.
- Avoid caffeine and alcoholic beverages both during work hours and 24 hours prior to performing field activities

The site HSO or designee should continually monitor personnel for signs of heat stress. If any signs of heat disorders are apparent, all field personnel must immediately rest and replenish fluids until body core temperature is lowered and remains stable.

7.1.3 Symptoms and First Aid Procedures

As discussed previously in Section 7.1.1, hazards associated with heat stress range from heat fatigue to heat stroke. Taking precautionary measures to ensure that personnel are not exposed to extreme temperatures for long periods of time can prevent these hazards. First aid measures for heat fatigue, heat rash, and heat collapse include taking frequent breaks so that the body core temperature can cool down. The following table includes first aid measures for signs of overexposure to heat.

TEMPERATURE HAZARDS	SYMPTOMS	TREATMENT
Heat Fatigue	Impaired performance of skilled sensorimotor, mental or vigilance jobs	No known treatment. Victim should be placed under cooler conditions until body core temperature lowers.
Heat Rash	Rash due to plugged sweat ducts, generally where clothing is restrictive	Keep dry towels or paper towels at the site to dry skin when excessive sweating occurs. Rash usually disappears when affected individual returns to cooler environment.
Heat Collapse	Loss of consciousness	Attempt to awaken individual. Relocate victim to a cooler area until body core temperature lowers and replenish fluids. Victim should rest for a few days.
Heat Cramps	Uncontrollable muscle spasms	Apply warm, moist heat and pressure to reduce pain. Give electrolyte drinks by mouth. Victim should intake additional potassium (Bananas are good potassium source).
Heat Exhaustion	Pale, clammy skin, profuse perspiration, weakness, headache, and nausea	Get victim into shade or cooler place. Immediately remove any protective clothing. Victim should drink plenty of fluids. Victim should lie down with feet raised. Fan and cool victim with wet compresses. If vomiting occurs, transport to hospital. Victim should rest for a few days.
Heat Stroke	Pale, dry skin due to lack of perspiration, weakness, unconsciousness	Immediately take precautions to cool body core temperature by removing clothing and sponging body with cool water, or placing in tub of cool water until temperature is lowered sufficiently (102°F). Stop cooling and observe victim for 10 minutes. Once temperature remains lowered, dry person off. Use fans or air conditioning, if available. Do not give the victim stimulants. Transfer to medical facility. Under no condition is the victim to be left unattended unless authorized by a physician.

8.0 Explosion/Electrocution Hazards

As stated previously in Section 4.1, extensive efforts are made in order to determine the location of subsurface utilities prior to corrective action activities. Efforts are made to obtain the location of underground utilities through the Line Locator Services, and utility companies are notified in advance to perform a site inspection and utility marking; however, the potential for a subsurface utility to go unnoticed exists. Therefore, the hazards associated with exposure to these utilities are identified and preventative measures and first aid procedures are discussed further in the following sections.

8.1 Explosion

Primarily when dealing with subsurface utilities, two potentially life-threatening hazards exist. The first hazard identified in association with subsurface utilities during excavation activities are discussed further in the following section.

8.1.1 Hazard Identification

The main hazard associated with puncturing a subsurface utility gas line is explosion. By releasing gas (usually natural gas, which is generally methane gas or propane gas) into the atmosphere, explosive conditions are favorable; therefore, ignition sources must be immediately eliminated in the event a gas release occurs. Due to the flammability of gasoline, ignition sources will be minimized; however, the engines are needed during field activities. Therefore, the only alternative to reducing the explosion hazard is to stop the release as soon as possible. However, when dealing with gases under pressure, the volatilization process may occur at such a rapid speed that an explosive situation is inevitable.

8.1.2 Hazard Prevention

Preventative measures are ensured prior to field activities. These measures generally encompass locating subsurface utilities. In addition, CDG will request local utility companies to perform site inspections and mark all subsurface utilities. In addition to this notification, if a particular subsurface utility is not identified and CDG suspects the utility to exist, CDG will take additional precautionary measures to ensure the suspected utility does not exist. These measures generally include locating utility meter boxes, etc. In addition, a field technician or subcontractor will generally probe the ground with a small rod in order to possibly identify the existence of subsurface utilities. This is conducted usually when machinery reaches 2-3 feet below the ground surface (ft-bgs).

8.2 Electrocution

8.2.1 Hazard Identification

The main hazard associated with puncturing a subsurface electrical line or coming into contact with an overhead power line is electrocution. When dealing with electricity, all things are classified as either conductors or insulators. Conductors allow electricity to pass through them while insulators prevent electricity to pass through. Examples of conductors are metals, wood, and water, and examples of insulators are rubber and PVC. Humans are also classified as conductors; therefore, contact with electrical sources can be fatal.

Because the heavy machinery is metal, which has been classified as one of the best sources of electrical conduction, contact with exposed electrical lines will allow current to flow. The National Electrical Code (NEC) has determined that 20 milliamps (mA) of current can be fatal. For comparison, a common household circuit breaker may conduct 15, 20, or 30 amps of electrical current.

8.2.2 Hazard Prevention

As stated previously in Section 8.1.2, preventative measures to locate subsurface and overhead electrical lines prior to corrective action activities are required by CDG. CDG will notify local utility companies to provide a site inspection and mark any existing subsurface electrical lines. In addition, CDG will contact the local power provider to insulate overhead lines if necessary. When dealing with the electrical components of the dewatering system, the following precautionary measures may prevent exposure to electrocution:

- Avoid contact with exposed connections/wiring and other related components
- If unfamiliar with the system, do not attempt contact with any component
- Call the Project Manager if unsure of any connections associated with the operations of the system.

8.2.3 Symptoms and First Aid Procedures

As discussed previously in Section 8.2.1, the hazard associated with puncturing subsurface electrical utilities and contacting electrical components of dewatering system is electrocution. The primary route of exposure is contact. The transmission of electricity is allowed because the metal equipment serves as a conductor for electrical current. Symptoms and treatment for exposure to electrical current is presented in the following table:

Caution: NEVER attempt to dislodge or remove someone that is contacting a high voltage line. Use an insulating material (PVC) to release the victim from the electrocution source.

9.0 Miscellaneous Hazards

The last hazard identified when performing corrective action activities has been classified as miscellaneous hazards due to the variety of these hazards. These hazards generally are nothing more than nuisances and with additional planning should be entirely avoidable; however, there are instances in which exposure to these hazards will occur. Therefore, these hazards are identified and preventative measures and first aid procedures are discussed in further detail in the following sections.

9.1 Hazard Identification

Occasionally, exposure to common nuisances may potentially result in a life-threatening situation. For example, a wasp or bee sting for some individuals only causes irritation or localized soreness; however, to others with little tolerance for wasp or bee venom, an allergic reaction can result which could potentially lead to death if not treated immediately. Therefore, allergic reactions to these insects have been identified as a potential hazard. In addition to the insects, contact with black widow spiders (red hourglass), brown recluse spiders (violin shape on back), and snakes are also potential hazard.

9.2 Hazard Prevention

Prevention, with regards to miscellaneous hazards, is more difficult to plan ahead. Generally, prior to conducting corrective action activities, the primary location for the activities has been established; therefore, barricades such as cones and company vehicles can be placed around the work area to prevent exposure to incoming and ongoing vehicles. However, the limitation to using cones is that they are often small and unnoticeable to drivers once inside the vehicles; therefore, the best prevention with regards to this miscellaneous hazard is to constantly be aware of your surroundings. This preventative measure can also be applied to exposure to insects, snakes, and spiders. Be aware of your surrounding when working around dark, secluded areas such as cracks and crevices, where snakes, spiders, and mice like to hide.

9.3 Symptoms and First Aid Procedures

If an employee or subcontractor shows any signs of an allergic reaction (anaphylactic shock, hives, or difficulty breathing) to a sting or bite, immediately seek medical attention at the nearest hospital. In the event that an operating vehicle strikes a person, seek medical attention immediately. In the meantime, a first aid kit and eye wash bottle will be provided by CDG and should be kept in all company vehicles. If field personnel are aware of their allergic reactions to insect bites, CDG requires that medication be kept on hand during field activities and at least one other field technician be made aware of the medication in the event of an allergic reaction should occur.

10.0 Additional Precautions

Additional precautions have been implemented in order to ensure overall safety for all field personnel. The safety protocols listed in this segment are to be considered the minimum requirements to be met by all field personnel engaging in corrective action activities.

10.1 Personal Protective Equipment

PPE is the most effective measure to prevent exposure to chemical hazards. There are four levels of PPE protection ranging from Level A to Level D equipment. Level A protection serves as the most conservative protective equipment, and Level D protection serves as the least conservative protective equipment. These levels are described further in the following table:

LEVELS OF PPE PROTECTION	PPE REQUIREMENTS
Level A	Worn when the highest level of respiratory, skin, and eye protection is necessary.
Level B	Worn when the highest level of respiratory protection is needed, but a lesser level of skin protection is necessary.
Level C	Worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is necessary.
Level D	Refers to work conducted without respiratory protection. This level should be used only when the atmosphere contains no know or suspected airborne chemical or radiological contaminants and oxygen concentrations are between 19.5 % and 23.0%

Level D protective clothing, as indicated below, shall be considered the minimum requirements for installation and excavation operations:

- Hard hat
- Coveralls*
- Non permeable gloves
- Steel-toe, non-permeable boots
- Hearing protection*
- Safety goggles (chemical)*

*These items area mandatory on an "as needed" basis. Generally, normal site conditions do not warrant the use of this equipment; however, under certain conditions where large amounts of free product are encountered, the issue of coveralls and safety goggles may be warranted. Safety goggles and hearing protection are mandatory when near the drill rig to reduce stress on the ear and also prevent objects from the soil or drill rig from lodging in the eye.

Equipment may be upgraded to Level C depending on the site conditions and/or monitoring results. Level C protection, in addition to Level D protection, includes the following:

- Rubber/chemical resistant outer gloves
- Face-shield if splash hazards exists
- Outer disposable booties
- Half-mask respirator

10.2 Signs, Signals, and Barricades

As stated previously in Section 9.1, corrective action activities are generally conducted at retail gasoline facilities and convenience stores, and are therefore, high traffic areas. All CDG field personnel must be aware of his/her surroundings at all times. In addition, the items listed below will be provided to secure the area in order to protect all field personnel as well as the general public.

- Utilize barricades to protect workers, pedestrians and vehicles from work activities
- Post area for "NO SMOKING"
- Utilize cones to protect workers from incoming and ongoing vehicles

10.3 Fire Protection and Prevention

As stated previously in Section 5.1, gasoline is a highly flammable substance. CDG requires that the work area be posted with "NO SMOKING" signs in an attempt to prevent fires from occurring; however, as a secondary precaution CDG plans to implement the following:

- Maintain a 20 lb. ABC Dry Chemical fire extinguisher on site at all times
- Eliminate ALL ignition sources in the vicinity of any releases
- The contractor will clean up all small spills using absorbent materials or by pumping

10.4 Storage and Decontamination

During the corrective action activities, impacted soils will be encountered. Groundwater will be treated and pumped to an NPDES outfall. Contaminated soil will be temporarily stored until transported for disposal. Decontamination procedures will be implemented should chemical exposure occur. The procedures are detailed below:

- Avoid contact with liquid gasoline or diesel
- Place contaminated soil on visqueen and cover once removed from the excavation
- Change any product contaminated soil immediately

- Wash any contaminated skin surfaces immediately with soap and water

Caution: All personnel are required to wash hands at the completion of work, before and after restroom use and before eating in order to prevent dermal contact with or ingestion of contaminants encountered during field activities.

11.0 Emergency Contingency Plan

If an incident occurs that requires declaring an emergency, all personnel will assemble at a designated emergency meeting location for further instruction. Arrangement for decontamination, evacuation and/or transport will be made at that time. The client and appropriate CDG personnel will be notified of the incident as soon as possible.

11.1 Notification/Reporting Procedures

In the event of an emergency, CDG Project Manager will be notified as soon as possible regarding the nature of the incident and emergency service contact will be notified as needed (see Section 11.7, Contingency Contacts). It is the responsibility of the Site HSO to report all incidents to the CDG Corporate HSO so that the required reporting procedures may be implemented.

11.2 Hazardous Substance Release

In the event that potentially hazardous substances migrate from the work zone and potentially endanger unprotected personnel or the community all on site activities will cease until the release is brought under control. CDG will immediately notify the proper authorities so that they may be able to ensure that public health and safety is maintained throughout this process event to the extent of evacuation if necessary.

11.3 Personnel Injury

In the event of an injury, all personnel will assemble at the designated emergency meeting location. The Site HSO, prior to the beginning of filed activities should designate this location. If the injured person is immobile one or more persons should remain nearby to provide any necessary first aid techniques. If medical help is necessary, the Site HSO will summon the appropriate assistance for transportation to the nearest medical facility. Due to the potential for these situations, CDG recommends that at least one qualified person be CPR/First Aid certified.

11.4 Evacuation Plan

Gasoline and diesel are flammable substances; therefore, a fire/explosion potential exists during the excavation activities. In the event of an onsite evacuation, the following plan will be implemented:

- A signal consisting of one continuous blast of a vehicle or air horn will be used
- All personnel will immediately evacuate the area and report to the designated emergency meeting location for further instruction

11.5 Spill Prevention and Response

In the event of a leak or spill, the area will be blocked using barricades, and the spill contained until absorbed and removed by authorized personnel. Unauthorized persons will be denied access to the area until all spills have been removed and field operations completed. CDG will follow prescribed procedures for reporting and responding to large releases by notifying the National Response Center (see Section 11.7). All materials will be disposed of according to regulatory guidelines.

11.6 Emergency Communication

In the event of an emergency situation, the following standard hand signals will be used onsite as a means of communication:

- Hand gripping throat-(cannot breathe)
- Grip partner's wrist or both hands around waist- (leave area immediately)
- Hands on top of head- (need assistance)
- Thumbs up- (OK, I am all right, I understand)
- Thumbs down- (No, negative)

11.7 Contingency Contacts

In the event of an emergency, CDG has provided several emergency contacts. These contacts, along with phone numbers, are listed in the following table. The Site HSO will be responsible for the notification of these contacts in the event of an emergency.

AGENCY	CONTACT	TELEPHONE NO.
Fire Department		911
Police Department		911
Ambulance		911
Hospital		256-737-0985
Corporate HSO	David Dailey	205-403-2600
Project Manager	Ann Dyer	205-403-2600
EPA RCRA-Superfund Hotline		800-424-9346
Chemtrec (24 hours)		800-424-9300
Bureau of Explosives (24 hours)		202-293-4048
Centers for Disease Control (Biological Agents)		404-633-5353
National Response Center		800-424-8802

Medical Facility

Name of Hospital: Cullman Regional Medical Center

Address: 402 4th Avenue NE, Cullman, AL

Phone: 256-737-0985

Route to Hospital: see attached map with driving directions

Travel Time from Site: 20 minutes

Distance to Hospital: 14.4 miles

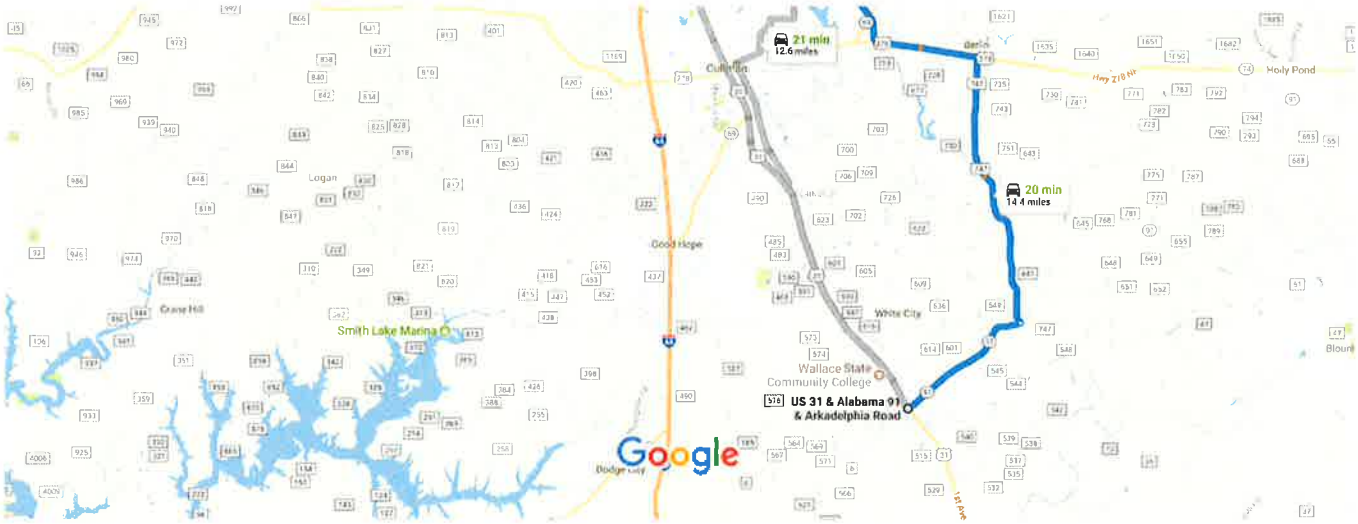
Name/Number of 24-hour Ambulance Service: 911

In cases of construction accidents, rapid notification to OSHA is required.

Google Maps

US-31, AL-91, Hanceville, AL 35077 to Cullman Regional Medical Center

Drive 14.4 miles, 20 min



Map data ©2017 Google 2 mi

US-31

AL-91 & Arkadelphia Rd, Hanceville, AL 35077

1. Head northeast on AL-91 N/Arkadelphia Rd toward Church Ave
   Continue to follow AL-91 N

3.4 mi

2. Turn left onto Co Rd 747

6.5 mi

3. Turn left onto US-278 W

2.4 mi

4. Turn right onto AL-157 N

1.9 mi

5. Turn right

377 ft

6. Turn left
   Destination will be on the left

0.2 mi

Cullman Regional Medical Center

1912 AL-157, Cullman, AL 35058